The Newspaper of Information Systems Management
December 13, 1993, Vol. 27, No. 50, 150 Pages, $6/Copy, $48/Year

COMPUTERWORLD

Novell eyes way to boost E-mail

Taps Da Vinci to shore up front end

By Lynda Radosevich

Novell, Inc. is rushing to bolster its weak enterprise messaging presence with partnerships before Lotus Development Corp. and Microsoft Corp. come out with their enhanced messaging lines next year. But users and analysts said the company may be doing too little too late to sway the corporate messaging market.

In its latest arrangement, Novell last week disclosed that it has authorized Da Vinci Systems Corp. in Raleigh, N.C., to sell its electronic-mail client software in Novell's signature red box. Also, Novell has authorized resellers to bundle Da Vinci's E-mail with NetWare and the NetWare Message Handling Service subsystem.

Novell and Retix unveiled a similar partnership last June for X.400 messaging services, and more partnerships are under discussion, according to Novell.

Novell's strategy is to provide MHS as a core messaging service in the NetWare Version 3.12 and 4.x operating systems and let users pick from a variety of third-party front-

Novell, *page 15*

Not in the mail

In a recent study of 200 medium- and large size businesses in the U.S., only one company said it used Da Vinci E-mail, the largest Novell MHS E-mail application

Lotus CC:Mail	42%
Microsoft Mail	[illegible]
WordPerfect Office	15%
Banyan Mail	[illegible]
Da Vinci E-mail	.5%

Source: Dataquest, Inc., San Jose, Calif

Notes goes mainstream

NLM version, improved interface may help large sites boost ROI

By Michael Vizard
ORLANDO, FLA.

■ Seeking to make Notes more attractive to deploy, Lotus Development Corp. is working on several initiatives that should make it easier for corporate sites to more quickly recoup their investment in the groupware package.

Lotus last week revealed plans to ship in February a version of its groupware that runs seamlessly with Novell, Inc.'s NetWare. Moreover, the company plans to deliver a more user-friendly interface in a major upgrade due within a year. The company made both announcements at its user conference here.

The Notes NetWare Loadable Module could help reduce the time it takes for most companies to gain a return on their investment in Notes. That is because many sites will no longer have to purchase a separate OS/2-based server to run Notes. Additionally, the improved user interface should reduce training costs, analysts said.

Also contributing to reduced training costs will be a new set of applications being developed using graphical tools from companies such as Powersoft Corp. [CW, Jan. 6]. Meanwhile, users are getting around the Notes interface by employing standard PC applications as a front end to the Notes environment (see story page 14).

Waiting for return

But most Notes sites have yet to fully see their investment in Notes pay dividends, according to a study to be released next month by International Data Corp. in Framingham, Mass. (see chart page 14). That research indicates that the larger the Notes installation, the more difficult it is to recoup the investment. Previously, Lotus ex-

Notes, *page 14*

HP edges toward NT support

By Mark Halper and Jean S. Bozman

Hewlett-Packard Co., the leading Unix vendor, is taking a large step toward supporting Microsoft Corp.'s Windows NT operating system on its workstations and minicomputers by altering the processor that powers those boxes.

The company last week said it is adding an Intel Corp.-type "little endian" byte-ordering scheme, in which bits are arranged in ascending order, to HP's descending "big endian" PA-RISC processor. As a result, the chip will become bi-endian.

While Digital's Alpha is little endian, IBM's PowerPC and Mips are bi-endian.

While HP stopped short of saying it is porting NT to PA-RISC, the little endian addition eases the porting task by properly aligning the chip with the data structure in NT, according to Peter Rosenbladt, group research and development manager of HP's minicomputer and workstation business. By comparison, HP's PA-RISC port of NetWare, another Intel-oriented operating system, was tedious.

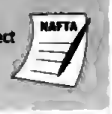
In the past, HP expressed only a lukewarm

HP, *page 12*

MAKING THE
MEXICAN CONNECTION
WHAT NAFTA DOESN'T SAY

Mexico is open, but that doesn't mean it's accessible. Restaurants, for example, have cellular phones so executives can bypass the regular phone system, which is poor in many areas.

Can you build a reasonable information technology infrastructure in Mexico? Yes, you can — but don't expect to solve problems the way you did here.



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Newspaper

Utility sparks IS revamp to plug credibility gap

By Mitch Betts

■ The Tennessee Valley Authority last week reorganized an information systems department in deep trouble.

The radical restructuring is TVA's latest effort to turn around an IS department plagued by procurement scandals and viewed by the business units as a slow, unresponsive bureaucracy that is best avoided.

In fact, the IS department at the huge quasi-public electric utility has been losing business to "shadow IS groups" and outside contractors. TVA executives acknowledged. TVA's finance department, for example, turned to Coopers & Lybrand and Oracle Corp. for development of a major financial system because it lacked confidence in the IS department's ability to build the client/server system in a timely fashion.

Putting customer first

The overhaul is intended to make IS more responsive to the business units, restore that lost confidence and compete for business with outsiders, said William F. Malec, who oversees the IS department as TVA's executive vice president and chief financial officer.

Internal clients, such as the finance department, were dissatisfied that IS projects "were taking way the hell too long," Malec said. "I won't be authorizing any IS project that takes longer than nine

TVA, *page 16*

AT A GLANCE

TENNESSEE VALLEY AUTHORITY

MISSION: Federal agency and wholesale generator of electric power in the southeastern U.S. Also manages flood control and navigation of the Tennessee River and regional economic development.

1992 FUNDING:
$5.1 BILLION from power sales
$135 million from congressional appropriations

EMPLOYEES: 19,500

IS EMPLOYEES: 925

IS BUDGET: $100 million

Now Imagine Letting
NT Fly On Alpha AXP.

digital

You Can Play Around With Windows NT On Another Microprocessor.

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■ Interactivity isn't just about media convergence, **Esther Dyson** says. It's about giving people the means to share information in new ways. *Page 33*

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Executive Briefing

Think hard about the way you divvy IS chores. Old organizational models may not work, particularly as you move to more distributed systems environments.

Division of IS personnel along business lines resulted in redundant and incompatible systems at the **Tennessee Valley Authority**. So as part of a general reform effort, the TVA is restructuring the IS organization into technical experts and "strategic consultants." The consultants will interact with business units to identify system opportunities but have a higher level and more unified view than is typical for IS personnel assigned to a specific unit. *Cover 1* Old functional divisions based on system expertise can also create problems these days, according to senior networking editor **Elisabeth Horwitt**. Trying to build new client/server systems with teams of specialists is counterproductive, she says. *Page 33*

Return on investment: It helps to know what you are trying to do. According to **Seth Pinsky**, IS manager at Sandoz Pharmaceutical and a committed user of **Notes**, a key reason why many Notes sites don't get the payback they expect is they treat the product as an E-mail extension in search of an application rather than as a set of distributed databases that require management. *Cover 1*

Smoke and mirrors? Healthy skepticism has grown up in the market of late. Many users and observers are taking an "I'll-believe-it-when-I-see-it" attitude toward the **Plug and Play Initiative**, endorsed by many top tier vendors as a way to make it easier for users to install and automatically configure a range of hardware and software products. Consultant **Mike Drips** expressed the mood in comments about a preview of **Microsoft**'s Chicago: "A lot of the plug-and-play stuff is still smoke. . . . Microsoft will try to sell everyone on it and hope they buy into it quickly." *Page 2*

Wireless developments: Data exchange with the office using cellular-based wireless data services is about to get easier as service providers **join hands around the modem pool**, swearing that they will all provide subscribers with access in the same way. This means users won't have to change scripts to send data to and from different regions. *Page 4* **Bell Atlantic** has announced that five cells and one switch in its Washington/Baltimore cellular network are now equipped with **Cellular Digital Packet Data (CDPD) service**. *Page 4* And the technology has gained an important convert. **Price Waterhouse CIO Sheldon Laube**, long a critic of wireless data transfer technology, has now committed to outfitting all the company's portable computer users with CDPD-capable systems. It's not the real answer, he says, "but it's the best we have for the next five years." *Page 4*

Startling statistics: According to software productivity expert Capers Jones, **cancelled software projects** accounted for a total dollar waste of $14.3 billion in 1993. *Page 116*

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Developers head for Chicago

Upcoming Windows 4.0 plug-and-play capabilities draw interest

By Ed Scannell

■ The starting gun on development for Microsoft Corp.'s much-anticipated Chicago — also known as Windows 4.0 — will be fired this week at the company's largest developers conference ever.

More than 5,000 developers will likely receive a high level of technical detail on Chicago and will hear about Windows NT Version 1.1 (see story at right) and Cairo, the company's object-oriented follow-up to Windows NT. Microsoft will have 200 hands-on systems for developers, with 70% of the machines running Chicago, to show off the 32-bit environment's power and ease of use.

Of particular interest to many developers and information systems managers are Chicago's plug-and-play aspects. They promise to make computer installation a much simpler task than it is today. But many users remain unclear about the immediate advantages for existing systems and the investment needed to take full advantage of the concept.

The plug-and-play initiative, backed by most of the industry's top-tier companies, is a specification that makes it easier for users to install and automatically configure a wide range of hardware and software products.

"A lot of the plug-and-play stuff is still smoke at this point. Until you start getting cards that have the plug-and-play ROM BIOS interface on it, there isn't much you can do," said Mike Drips, a consultant and Windows beta-tester in Tampa, Fla. "Microsoft will try to sell everyone on it and hope they buy into it quickly."

Drips and other users said the lack of hardware and applications, and/or their added expense, could force some users to hold off on buying Chicago.

> Chicago's plug-and-play aspects promise to make computer installation a much simpler task than it is today

At the same time, however, many observers said enough vendors will sign on to plug and play to put a large number of products on the market even before Chicago arrives in the fall.

Added features

Chicago's plug-and-play capabilities will not offer much help for IS managers with thousands of old-style products, but Microsoft said it will help them to at least diagnose many problems faster. Company officials also said the operating system's added speed and features, compared with 16-bit Windows 3.1, will sell it while plug-and-play compatible products dribble out to market.

"We are working closely with a lot of partners to create a 'no excuses standard,' which means making systems easy to modify through plug and play," said Brad Silverberg, vice president of Microsoft's Personal Systems group.

Not much more than NT

Besides having all 32-bit networking code, the second Chicago alpha, which was delivered to some beta users last week, has a few features that Windows NT does not have.

These include support for Microsoft's Telephone Applications Programming Interface and the company's color management scheme, which Silverberg describes as TrueType for colors. With it, users will be able to more accurately print out complex color schemes as they appear on-screen.

Despite this, Windows NT will remain a superset of Chicago, with these and other features added into a version of NT that will come out shortly after Chicago.

While the alpha version does not have the new document-centric interface Microsoft has been touting, developers can begin doing useful program development with it, according to Silverberg.

Focus on Win32

At this week's conference, the company will once again advise developers to focus on one application programming interface, namely Win32, to create applications that work with both Chicago and Windows NT [CW, Oct. 25].

While Microsoft will not kick off serious beta testing of the product until February or March, company officials still say they can deliver the 32-bit operating system by the fall of 1994.

Given its delivery record with Windows NT and the aggressive beta program that could include as many as 20,000 or more sites, Microsoft will have to struggle to meet its fall deadline.

"If a large-scale beta doesn't begin until February or March, it's difficult to see the product in retail stores by the end of 1994. I think the end of first-quarter 1995 is more real," said another beta user.

Oracle to aim small with planned low-end database

By Kim S. Nash

Oracle Corp. plans to disclose next month a slimmed-down version of the Oracle 7 relational database designed to cater to small workgroups of 10 or fewer users.

The product, dubbed Oracle LAN Server, is part of Oracle's effort to elbow into the low-end client/server market, said Chief Executive Officer Larry Ellison. Oracle LAN Server will require several megabytes less memory than Oracle 7, partly because it lacks heavy-duty features such as parallel query. The product will be shrink-wrapped and sold through Novell, Inc. resellers, Ellison said.

Oracle's Larry Ellison *said the LAN Server will be 'a one-button install'*

Oracle LAN Server, due to ship in the first quarter of next year, will be "a one-button install . . . that needs no database administrator," he said.

While Oracle LAN Server is bigger and more functional than a single-user database such as Microsoft Corp.'s Access or Borland International, Inc.'s Paradox, it is smaller and expected to be less expensive than OracleWare, Ellison said. The first incarnation of OracleWare — Oracle 7 bundled with NetWare 3.12 — is priced at $3,095 for a five-user version.

Filling a gap

Oracle LAN Server will be aimed at smaller and simpler departmental client/server setups than OracleWare.

Oracle LAN Server could fill a glaring gap in Oracle's line.

"They've needed to get into the small network or desktop area for quite a while," said Paul Cubbage, an analyst at Dataquest, Inc. in San Jose, Calif.

"It's all well and good to talk about massively parallel systems, but that's a small, small portion of the market," Cubbage said, referring to Ellison's goal of providing massively parallel databases to movie, phone and cable companies for use in information highway applications.

Operating systems

Microsoft outlines memory, speed upgrades for latest NT

By Ed Scannell
SAN FRANCISCO

Microsoft Corp. will fix some of the deficiencies users have cited in Windows NT with an improved version that is speedier and requires less memory.

Code-named Daytona, Windows NT 1.1 lets users generally run their current hardware/software configurations with about 4M bytes less memory than what Release 1.0 requires.

"So if you need 20M bytes to run NT now, you'll need only 16. If you need 16 now, you'll only need 12 and so on," said Brad Silverberg, vice president of Microsoft's Personal Systems group, during an interview here.

Twice as fast

The new release, expected to enter beta testing next month, will be about twice as fast as the current version when running on a server, Silverberg said. He added that the company does not yet have definitive results for the improvements.

Other improvements include the ability to preemptively multitask 16-bit Windows applications in a virtual device machine, which quickens desktop processing. In the first version, Microsoft used its own technique, called Windows on Windows, which technically was not true preemptive multitasking.

> Out with the old
>
> WINDOWS NT 3.50
>
> - Minimum memory requirement: 16M bytes.
> - Runs 16-bit Windows applications in a virtual device machine.
> - No support for OLE 2.0 on workstations.
>
> . . . In with the new
>
> WINDOWS NT 1.1
>
> - Minimum memory requirement: 12M bytes.
> - Runs Windows 3.1 faster using Microsoft's Windows on Windows technology.
> - Network server and redirector.
> - Improved support for TCP/IP and IPX/SPX network protocols.
> - Support for OLE 2.0 on workstations.

Redirector addition

The new version will also have a Novell, Inc. NetWare redirector that allows a Windows NT Server to act as a gateway to NetWare to service multiple clients. That eliminates the need to have a NetWare redirector in each client.

The company has also added better TCP/IP support that essentially gives information systems departments more flexibility in either choosing the TCP/IP support already built into Windows NT or substituting another vendor's implementation.

A company spokesman said Microsoft expects to ship Version 1.1 in the first half of next year. Pricing has not been established.

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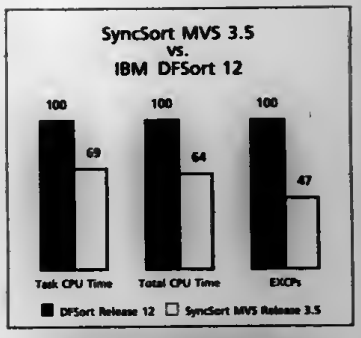

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AT&T launches Sonet links

By Joanie M. Wexler

AT&T last week filled in a big chunk of the nation's information superhighway when it served up the first interexchange Synchronous Optical Network (Sonet) service in the U.S.

The service will allow users to create dedicated links running at 155M bit/sec speeds among sites in about 200 U.S. cities. Early applications will likely include disaster recovery, supercomputer communications and state-sponsored distance learning programs, said Hemant Vaidya, AT&T's product line manager for Accunet High-Speed Services.

Sonet is a very high-speed international standard for a fiber-based transmission infrastructure. Imminent business applications that mix voice, data, video, graphics and images will soon require a Sonet foundation to carry Asynchronous Transfer Mode (ATM), frame relay, and other high-speed network services that can transport this bandwidth-intensive traffic.

"The merging of voice, data and image into a single network has become a general business requirement," said Larry Gessini, president of the International Communications Association (ICA) user group and director of telecommunications at Agway, Inc., an agricultural cooperative in Syracuse, N.Y.

"Any major network effort that could support major applications and faster movement of information — hopefully at a lower cost — would be looked on very favorably" by the ICA, he said.

Meanwhile, corporations that offer network-based services are already eyeing AT&T's Sonet service. Comdisco Disaster Recovery Services, based in Rosemont, Ill., for example, just completed a trial of the AT&T dedicated-line service, called Accunet T155, among facilities in Illinois and New Jersey and will probably install the Sonet links, said John Sandberg, vice president of networking products and services.

Sandberg said Comdisco needs Sonet for two main reasons: to support the new high-speed network services its customers are migrating to (such as ATM) and to streamline its own operational efficiencies.

"This is the first technology with built-in interoperability among different vendors' equipment and using the same management structures" across heterogeneous devices, he explained.

Currently, in Comdisco's backup operations center the company must duplicate each customer's transmission switch of choice. With Sonet, Comdisco could whittle down the number of switches it supports because Sonet compatibility would allow the company to logically and physically partition a given device among several customers, Sandberg said.

The availability of long-distance Sonet links also moves the country a notch closer to Vice President Al Gore's vision of solving social and environmental problems and fostering economic growth through the use of information technology, said Ken McGee, vice president at Gartner Group, Inc.

Making music

Interexchange carriers Sprint Corp. and MCI Communications Co. have deployed some Sonet segments in their own backbones for aggregating customer traffic, and the seven regional Bell operating companies are in various stages of building Sonet "on-ramps" into the superhighway.

Future vision

"This is the first three-lane highway" in achieving those visions, McGee said. The Sonet service represents "the next generation of transmission hierarchy in America — the migration from the asynchronous structure we've had for 30 years," he said.

Most companies will not need nationwide Sonet right away, though, as evidenced by the meager acceptance of T3 (45M bit/sec.) services, whose tariffs have remained too high to become mainstream. Vaidya said the Accunet T155 service will initially be tariffed on a customer-by-customer basis, and said he expects per-bit prices to be 10% to 15% higher than T3, provided customers use up the bandwidth.

Price Waterhouse to give CDPD a chance

By Michael Fitzgerald

Price Waterhouse has signed up to test Cellular Digital Packet Data (CDPD) early next year despite initial misgivings about the nascent wireless data transfer protocol. The Big 6 firm will begin tests of the technology via McCaw Cellular Communications, Inc.'s network in January or February next year, according to Sheldon Laube, Price Waterhouse's national director of information and technology.

Price Waterhouse joins such companies as United Parcel Service, Inc. and American Airlines, Inc. in preparing CDPD pilots [CW, Nov. 22].

Depending on pricing, Price Waterhouse intends to outfit all of its portable computer users with CDPD-capable systems, in part by leveraging software expected from a recent McCaw/Lotus Development Corp. agreement to bring CDPD to Lotus' Notes [CW, Nov. 15].

"We intend to be there at the beginning" of CDPD use, Laube said.

Price Waterhouse's move to support CDPD is somewhat surprising since Laube has been harshly critical of wireless this year, saying it provides poor support for large data files [CW, June 28].

Apparently Laube has softened his attitude to some degree. CDPD "is not the real answer, but it's the best we have for the next five years," he said last week. Portable technology is particularly important to Price Waterhouse because the company's revenue comes from having its employees in the offices of other firms. Price Waterhouse is one of the most aggressive adopters of notebook computers — some 80% of its PC purchases are notebooks.

Sheldon Laube: *CDPD is 'best we have'*

Where to plug in

Laube said wireless connectivity was a must for his users. "If [my people] are in your office and you have a Rolm or any other digital phone network, how can they plug in their modem? The benefit here is that I don't have to have a phone line to connect the computer," he said.

Laube said Price Waterhouse expects combination land-line/CDPD-capable modems to hit the market in 1994. The company will buy only this sort of modem as soon as it is feasible, Laube said. Currently, no CDPD modems are available, but several have been announced for availability in January.

Cellular modems pick up support

By Stephen P. Klett Jr.
WASHINGTON

Bell Atlantic Mobile last week said it will use Primary Access Corp.'s WireAccess cellular modem pooling software in its AirBridge Gateway service to provide cellular/land-line protocol conversion between remote data devices and host computers over its cellular networks.

"The gateway service will enable users to walk into any computer store, buy a cellular modem for their portable, and they're in business — without worrying about their land-line connection," said Benjamin L. Scott, executive vice president and chief operating officer at Bell Atlantic Mobile, the cellular subsidiary of Bell Atlantic Corp. in Bedminster, N.J.

Available now in Baltimore, Philadelphia and Washington, AirBridge Gateway will be offered in all Bell Atlantic markets by the end of next year, Scott said.

The announcement was made at Wireless Datacomm '93 here.

Cellular carriers Ameritech Cellular Services, Inc., GTE Mobilnet and Nynex Mobile Communications, Inc. have announced similar services using WireAccess.

"We've all agreed we're going to be compatible and will provide subscribers with access to the modem pool in the same way, which means users won't have to change scripts to send data from region to region," said Greg Oslan, director of wireless data at Ameritech in Chicago.

Analysts said the modem pool would help cellular technology move forward because it preserves users' investments by not requiring them to change the host computer's modem.

Bell Atlantic also announced that it has provided the first five cells and one switch in its Washington/Baltimore cellular network with Cellular Digital Packet Data service, using technology from AT&T. Called AirBridge Packet, it is also slated to be available to all Bell Atlantic markets by the end of next year.

Motorola moves

Wireless vendors' reaction to Motorola, Inc.'s recent announcement that it would charge license fees to companies deploying Cellular Digital Packet Data (CDPD) was low-key. Motorola has claimed some of its patents cover technology inherent in the CDPD spec, which became final in August.

A Motorola spokesman said the company raised the possibility of patent issues to the CDPD consortium in April, when the direction of the CDPD specification began to gel.

"I agree, essentially, with what Motorola is doing, and my sense is that it has no desire to slow down CDPD implementation," said Benjamin L. Scott, executive vice president and chief operating officer at Bell Atlantic Mobile. "The patent claims will not be a major factor in our CDPD plans."

Jeffrey Brown, vice president of sales and marketing at McCaw's Wireless Data division, said, "Motorola has said it will be reasonable with terms and besides, look at who their biggest customers are: the group of carriers that form the CDPD consortium. I don't think they'd want to upset us."

It is unclear at this time, however, what the cost of CDPD licensing will be to equipment vendors and their customers. Motorola is striking individual licensing deals with each supplier, rather than charging a fixed percentage of the equipment cost, a Motorola spokesman said. — *CW staff*

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Apple already missed its best 'open' shot

Apple has decided to open up its Macintosh operating system as a way of broadening its appeal and generating a larger community of third-party developers. This is a good move but about a decade too late.

If Apple had responded quickly to the implications of the IBM PC's success, it would have fielded the Macintosh as a volume contender for the business desktops when the market was burgeoning. But Apple's roots, its individualistic culture and its persistent interest in high margins didn't allow it to do that.

Now it's raising its hand from the back of the room to say, "Me, too," on the open systems front. It's too little too late, although there's a smidgen of hope that Apple will get a second chance, compliments of the PowerPC microprocessor.

Instead of learning its lessons from the IBM PC, Apple has until now seemed to follow the example of Digital, another company so dominated by its founder that events nearly passed it by before it could respond.

For many years, Digital sold computers that were progressively more open. Its software developers paid keen attention to industry standards, and each generation of hardware was more programmable in the language of the user's choice. The process ended in Alpha, a crowning achievement in open hardware design.

Opening up the Macintosh operating system is a good idea, but one that came much too late.

Charles Babcock

But the decisive step may have come too late. For much of its history, Digital was an open systems vendor only insofar as it was more open than IBM. Digital zigzagged toward an open systems strategy, but it fell short of committing to one. Indeed, it became increasingly hard for Digital's leadership to accept Unix as an "open system."

Then one day it woke up to find an upstart, Sun Microsystems, using Unix to do to Digital what it had been doing to IBM — posing as the more open vendor. (At one time, Sun sold 75% of its workstations to Digital customers, according to brokerage house Sanford Bernstein & Co.'s analysis.)

Now it is Apple's turn to belatedly lurch toward an open systems strategy. Its AppleSoft Division will make System 7 available to other PowerPC vendors to produce clones.

But instead of producing a vibrant community of Compaqs or Dells delivering Macintosh look-alikes, it is more likely to yield an asthmatic set of knockoffs, coughing and wheezing their way into a few protected niches.

The best way to create a vibrant clone community is for the originating vendor and cloners to compete on near-equal footing, trying to outdo one another in coming up with customer choices. The sooner the clones make their entry, the better. This proliferation occurred with the IBM PC because no single vendor controlled all the parts, and Microsoft was willing to sell MS-DOS to all comers.

A variety of hardware suppliers sprang up, the number of application developers multiplied, and Microsoft, to its credit, recognized them as resources that could be cultivated to expand the market.

Expecting the same thing to happen with System 7 at this late date is problematic. Apple may want it to happen, but much of the fertile ground that might foster it has been closed off. The Apple customer has been trained for 16 years to think that only Apple can deliver the hardware, and customer loyalty at this point will test the staying power of clone start-ups. Apple has also been rapidly lowering the price of the Macintosh, leaving less room for newcomers to maneuver on price/performance appeal.

The possibility that intrigues me is that of Apple and IBM teaming up to offer System 7 and something else — Taligent? AIX? OS/2? — on a single PowerPC platform, increasing the stakes by creating a more open system than any single PC that has gone before it.

Babcock is *Computerworld*'s technical editor. His MCI Mail address is 575-2737.

IBM, Novell team up on CICS

By Elisabeth Horwitt

Continuing efforts to promote its CICS transaction processing environment in the client/server arena, IBM last week said it is codeveloping with Novell, Inc. software that will enable NetWare clients to access and update remote CICS hosts.

Novell and IBM plan to ship by the second half of next year a CICS client implementation on the NetWare requestor.

This will permit users to develop applications that are automatically sent out over the NetWare client-to-server link and across the NetWare for SAA gateway to access resources and applications on a CICS Enterprise Systems Architecture or MVS host, said Olwyn Spencer, an IBM Transaction Systems business area manager.

Managers at two companies said such a product might well halt, or at least slow, their migration off CICS hosts and onto client/server platforms.

What such a product should provide is a front end to make it easy to access mainframe resources and integrate them with existing client/server applications, said Donald Sternfield, director of information systems at Morgan, Lewis & Bockius, a Philadelphia law firm. "If we had that, why not stay on the mainframe? It's the most reliable equipment I've got."

"We are moving very rapidly toward client/server solutions and away from CICS because of our limited ability to use CICS in a client/server environment," agreed Gary Robinson, technology consultant at Salf Insurance Co. in Salem, Ore.

IBM gets its kicks

CICS became available for all IBM platforms this year with the following releases:

Macs
CICS/Mac Version 2.2

Apple
CICS/VSE Version 2.2

Jay
CICS/6000

Sarpaxxxx
CICS OS/2 Version 2.0

One-stop shopping

A key advantage of the IBM/Novell project is that users will be able to use a single client requestor and protocol stack to access both NetWare and IBM hosts, said David Passmore, a principal at Gartner Group, Inc. in Stamford, Conn.

Indeed, IBM plans to provide NetWare client access to its available CICS OS/2 implementation as well as to the AS/400, VSE and AIX versions of CICS scheduled to roll out next year, Spencer said.

Pricing for the CICS NetWare client was not available.

Networking

IBM explains product direction

By Joanie M. Wexler
NEW YORK

Members of the recently reorganized IBM Networking Systems group donned their new hats last week and disclosed additional deployment and pricing details about IBM product plans with Asynchronous Transfer Mode (ATM), wireless; internetworking and other offerings.

• ATM: IBM's 100M bit/sec. server adapter slated to roll out in the first quarter of next year [CW, July 19] will cost roughly $3,000. IBM's 25M bit/sec. workstation adapters, due in mid-1994, will be priced at about $1,000, dropping to "less than $500 over time, but not in 1994," said Don Haile, general manager of IBM's newly formed Networking Software Division.

Adapters running the 155M bit/sec. ATM speeds should ship in 1995, he said.

The ship date of IBM's Transport Network Node (TNN) wide-area ATM switch has moved up from late 1994 to mid-1994. The TNN, now in beta-testing at IBM and Sears, Roebuck and Co.'s jointly owned Advantis value-added network, is expected to cost about $500 per port.

• Network management: On the ATM side, a NetView/6000-based application will show with one set of user commands an integrated topology view of the TNN, Network Equipment Technologies, Inc. IDNX T1 multiplexers, which IBM resells, wiring hubs and routers, said William E. Warner, vice president of enterprise management.

The company also plans next year to get into NetView Distribution Manager/6000-based software distribution on non-IBM platforms, such as Novell, Inc.'s NetWare, he said. Warner predicted NetWare support by midyear.

IBM's strategy for getting its network management applications onto other vendors' Unix-based management platforms is to make its SNA-oriented NetView enterprise management system available for those platforms, then run NetView applications there, as opposed to porting applications directly to those platforms, Warner explained.

While some analysts questioned whether this might be a shortsighted tactic because users might be turned off by possible dual investments, others called it a smart strategy.

"They are being smart about the development investment," said Michael Howard, president of Infonetics Research, Inc. in San Jose, Calif. "They'll just build a gateway for the platform" and the applications will automatically port over. But the approach means the user will have to buy a NetView gateway or the vendor will have to buy it and bundle it with its product.

• LANs: IBM is working with an unnamed partner on a Token Ring switch — which dedicates a Token Ring LAN's full 16M bit/sec. bandwidth to one or a few resources — slated to ship next year, Haile said. IBM executives, however, did not specify how they would advise customers on choosing among high-speed LAN alternatives such as the dedicated Token Ring, ATM and 100M bit/sec. Ethernet/Token Ring LANs under construction in the standards bodies.

IBM also said it will provide NDIS3 driver support on its adapters for Microsoft Corp.'s Windows NT compatibility next year. "We are looking at whether our key software, such as DB2, should run on NT," Haile said.

• Wireless: IBM intends to ship in March or April LAN adapters for portables that interface both to Cellular Digital Packet Data and Ardis wireless networks, said Jim Boyle, vice president of wide-area networking.

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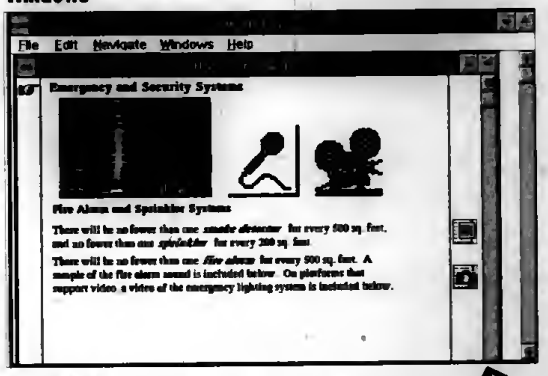
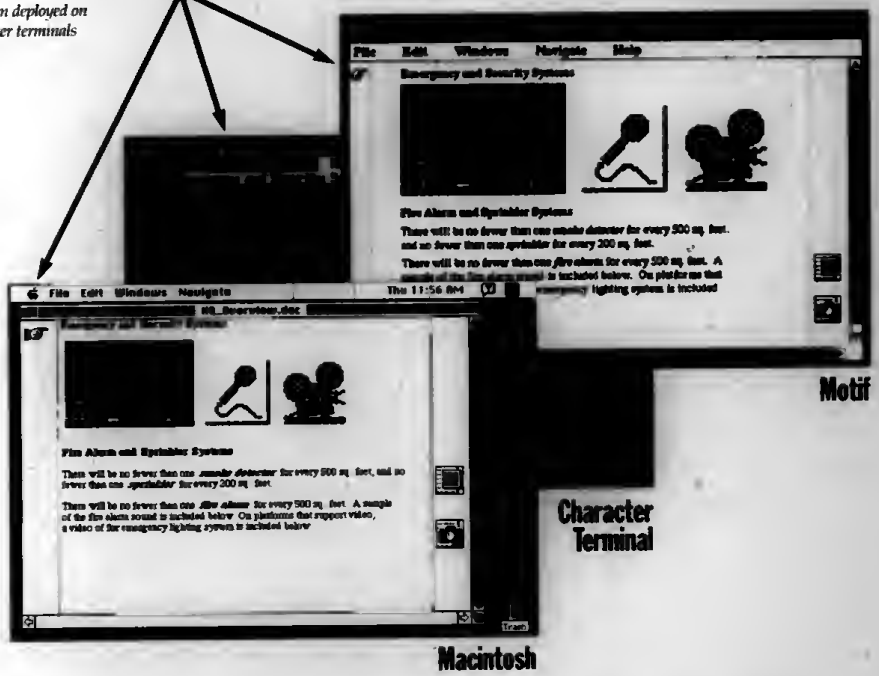
Windows

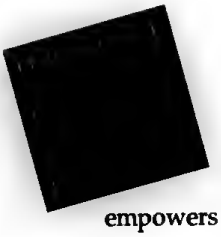


This application was designed in Windows, then deployed on Windows, Motif, Macintosh, and even Character terminals without any programming

"CDE's portability has been a great advantage to us, having developed the original system on UNIX we were able to port with no additional code to Microsoft Windows. It also allows us to offer the system to a much wider user base than if it had been available for only one of these environments."

Chris Nicholls
Manager IS Dev.
British Telecom, UK





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News Shorts

Word for NT to be showcased

At its Win32 Professional Developer's Conference this week, **Microsoft Corp.** will preview a 32-bit version of Word 6.0 for Windows NT that takes advantage of the client/server operating system's features. The new version allows multiple users logging on separately to a Windows NT network server to be granted access automatically to those documents based on their user names and designated privileges. Version 6.0 for NT also accommodates long files names intended to make documents easier to manage.

Acer plans server intro

Acer America Corp. in San Jose, Calif., consolidated its AcerFrame and AcerAltos server lines, which will now be sold solely under the AcerAltos name. Acer will unveil today the first additions to the AcerAltos family: the entry-level 700, the midrange 7000 and the quad-Pentium 17000

Network General agrees to buy ProTools

LAN analysis tool vendor **Network General Corp.** in Menlo Park, Calif., last week signed an agreement to purchase privately held **ProTools, Inc.** in Beaverton, Ore. The purchase, scheduled to be finalized by the end of January, is intended to enable Network General to meet long-standing customer demands for lower-cost distributed LAN management capabilities and integration of Network General's Sniffer products with leading network management platforms.

Data at greater risk

Is corporate data more secure than it used to be? Not according to a survey released last week at the **Computer Security Institute Conference**. Approximately 80 of the 100 computer security managers surveyed said they believe corporate America faces a greater security risk today than a year ago, with the greatest threats being hackers and disgruntled ex-employees. Sixty managers said their information security budget is inadequate to meet the challenges of the next 12 months.

Legent offers data movers

Legent Corp. in Herndon, Va., last week introduced Legacy Data Mover, a family of software products for moving large volumes of mainframe-based data to a server through a four-step process of data extraction, data conversion, data transport and data application. The products will be available in the first quarter of next year.

The Hartford trims staff

ITT Hartford Life Cos. eliminated the six-person corporate information systems staff reporting to Chief Information Officer Leo Heile when it laid off 1,000 employees in October. The staff helped Heile run IS councils, negotiate contracts with vendors and coordinate major information technology projects among The Hartford's companies, which include Sheraton Hotels and Hartford Insurance. Besides Heile, a 26-person local support staff is the only IS staff in the company's New York headquarters.

SHORT TAKES **Hewlett-Packard Co.** endorsed **Novell, Inc.**'s UnixWare as a platform to enable computers based on **Intel Corp.** architectures to be clients of HP/UX PA-RISC servers. . . . Novell has reduced the cost of upgrading NetWare v3.11 to a same-user-count NetWare 3.12 by as much as 50%. . . . **Southland Corp.** signed agreements with **NCR Corp.**, **Electronic Data Systems Corp.** and **Canmax Retail Systems, Inc.** to implement a comprehensive retail automation system for 5,000 7-Eleven convenience stores.

Digital plans customer service fixes

Targets contract administration and telephone support

By Craig Stedman
SAN FRANCISCO

Digital Equipment Corp.'s customer service unit last week laid out a plan to improve its telephone support and handling of contract administration, two areas that have drawn user criticism. However, the company said the full effect of the changes will not be felt until 1995.

The promised service changes are part of a wider overhaul of Digital's business practices and internal information systems that senior management approved late last month. The re-engineering will also touch on areas such as order processing and billing, company executives indicated.

While Digital said there is hope that some improvements will become evident by next summer, the key part of the service plan — integration of separate databases for contract administration, call handling and service dispatch — is not scheduled to be implemented until April 1995 at the earliest.

At your service?

Digital is trying to resolve contract administration problems. Some examples include the following:

Problems
Slow response on contract renewals and changes.
Inaccurate information on contracts.
Users routed to multiple offices for approvals.
Slow updating of service call information.

Planned actions
Eliminate need to enter invoices in multiple databases.
Implement one 360-person staff for handling contracts.
Simplify and reduce size of contracts and invoices.
Link local office and telephone support center databases.
Offer continuous service and payments to reduce renewal process.
Eliminate need to enter data more than once for multilocation customers.
Integrate key functional databases.

"This is not a quick-change process," said Phil Pietrowski, Digital's business operations manager for multivendor customer services. Especially in the area of contract administration, Pietrowski added, the firm is trying to fix a situation "that we understand is broken."

No choice but change

Attendees of the Digital Equipment Computer Users Society (DECUS) conference here made it clear that changes are necessary. Robert Koskovich, information services manager at EDM Supplies, Inc. in Downey, Calif., said the mechanics of renewing and altering Digital service contracts "have been a nightmare."

"Digital is finally waking up and smelling the coffee," added Steven Tihor, assistant research scientist at New York University. He said it can take up to five months to renew the school's annual maintenance contract because of Digital's inability to quickly reconcile information from its various databases.

A system manager for a government operation in Colorado, who asked not to be identified, said his 1993 service contract was just recently finalized. "And it's still only close to what it should be," he said. "There are some things that we don't have anymore that we're paying for service on and vice versa."

"It's a classic legacy systems problem," said Bill Mayhew, president of the Village Systems Workshop, Inc. in Natick, Mass., and chairman of DECUS' business practices service group. Digital's need to manually load information from one database to another is also labor-intensive, leading to higher costs, he noted.

Dave Beresford, U.S. customer administration manager at Digital, acknowledged that systems shortcomings contribute to poor responsiveness, inaccurate contracts and late updates to service delivery information.

Digital has already integrated some of its overseas service databases, but Beresford said the April 1995 date for completing the U.S. project is only a target at this point and might have to be extended.

At the same time it is joining its databases, Digital plans to migrate its customer administration operations from terminal-based VAX systems to Alpha AXP machines running in client/server mode, Beresford said. Order processing and manufacturing scheduling will also be revamped then.

In the short term, Digital plans a series of lower-level contract administration changes to provide users with some relief by next July or so. Included will be smaller contracts; an offer of continuous service and payments to cut out the renewal process; and the elimination of the need for duplicate data entry for large multisite customers.

Users said the 1995 date for completing the IS overhaul would not likely be a major problem, as long as Digital can make some intermediate improvements. "1995 is a long time to wait, but it's a big octopus they're wrestling with," Koskovich said.

The company also indicated that it now plans to measure the performance of phone workers based more on customer satisfaction than on the number of calls closed. This shift is supposed to be phased in over the next few months, along with an increase in the number of high-level service engineers available to take calls, Digital executives said.

The previous approach led some users to complain that they were being rushed to make the call quota, according to Mayhew.

All shook up

The DECUS board last week stepped up the pace of the U.S. chapter's reorganization, approving a plan that cuts funding from all local user and special interest groups and shifts more business responsibilities to the unit's professional staff.

While the reorganization of the 32-year-old user group has been in the works since February, the board accelerated its implementation in the face of a deficit that DECUS sources said could approach $800,000 for the first half of the chapter's fiscal year, which ends this month. "We didn't want to slip into a position of cash-flow difficulties," said Margaret Knox, U.S. chapter president.

A "token" membership fee, yet to be finalized, is also being added. And local user groups are being moved "to more of a peer relationship" with DECUS, in which they would be responsible for their own activities and finances, Knox noted.

—Craig Stedman

A picture is worth a ~~thousand~~ 25,000 lines of code.

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Robert Conway
Director, IES
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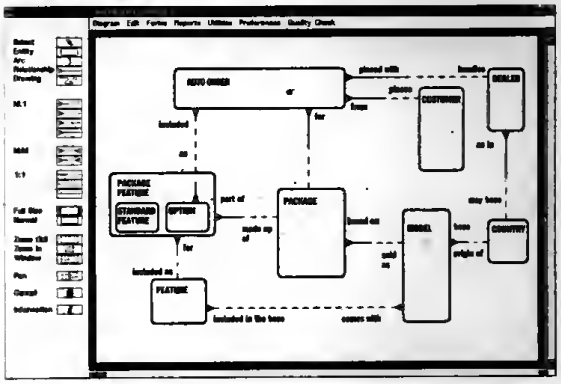

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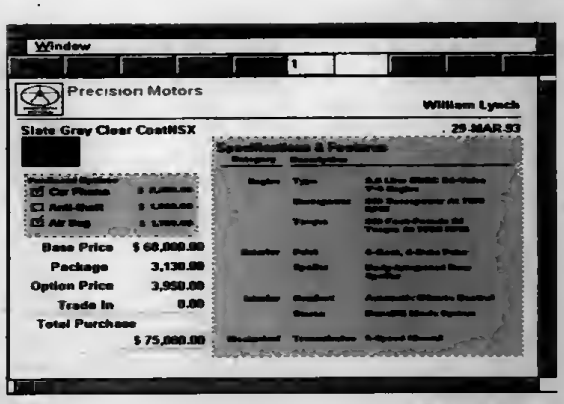

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Former Kodak IS director to head global plastics company

By Joseph Maglitta

Katherine M. Hudson, a former information systems director who became Eastman Kodak Co.'s top female business executive, has been named president and chief executive of a $243 million international plastics manufacturing company.

Hudson, 46, is ending a 24-year career at the Rochester, N.Y., giant to head up W. H. Brady, a diversified Milwaukee-based maker of coated film and industrial products, effective Jan. 1.

Hudson said she hopes to leverage her IS experience into global expansion and value-creating growth at Brady, an 80-year-old company that manufactures 20,000 different products.

Hudson said she is "very impressed" with Brady's centralized, AS/400-based operation and expects that a number of pilot re-engineering programs will be expanded. She declined to be more specific.

"Brady has used a good selection of external packages that are keeping [software] development costs and staff down," she said. "They are a decentralized company providing a source of standard technology that can then be used by the divisions. [That] was something I was working on forever when I was at Kodak."

Joyce Ravid

Katherine M. Hudson *will head $243 million plastics firm*

As for how involved she plans to be in the firm's technology planning, Hudson said, "In general, I'm a hands-off type of manager."

However, she added that she expects Administrative Vice President Tom Turner, who now oversees IS, to play an important role in corporate decision-making. "Anybody who has lived through an IS position knows that, clearly, the IS function should have a role at the strategy development table," Hudson said.

Ideal background

Hudson said she views her new post as evidence that IS is a good background for corporate advancement.

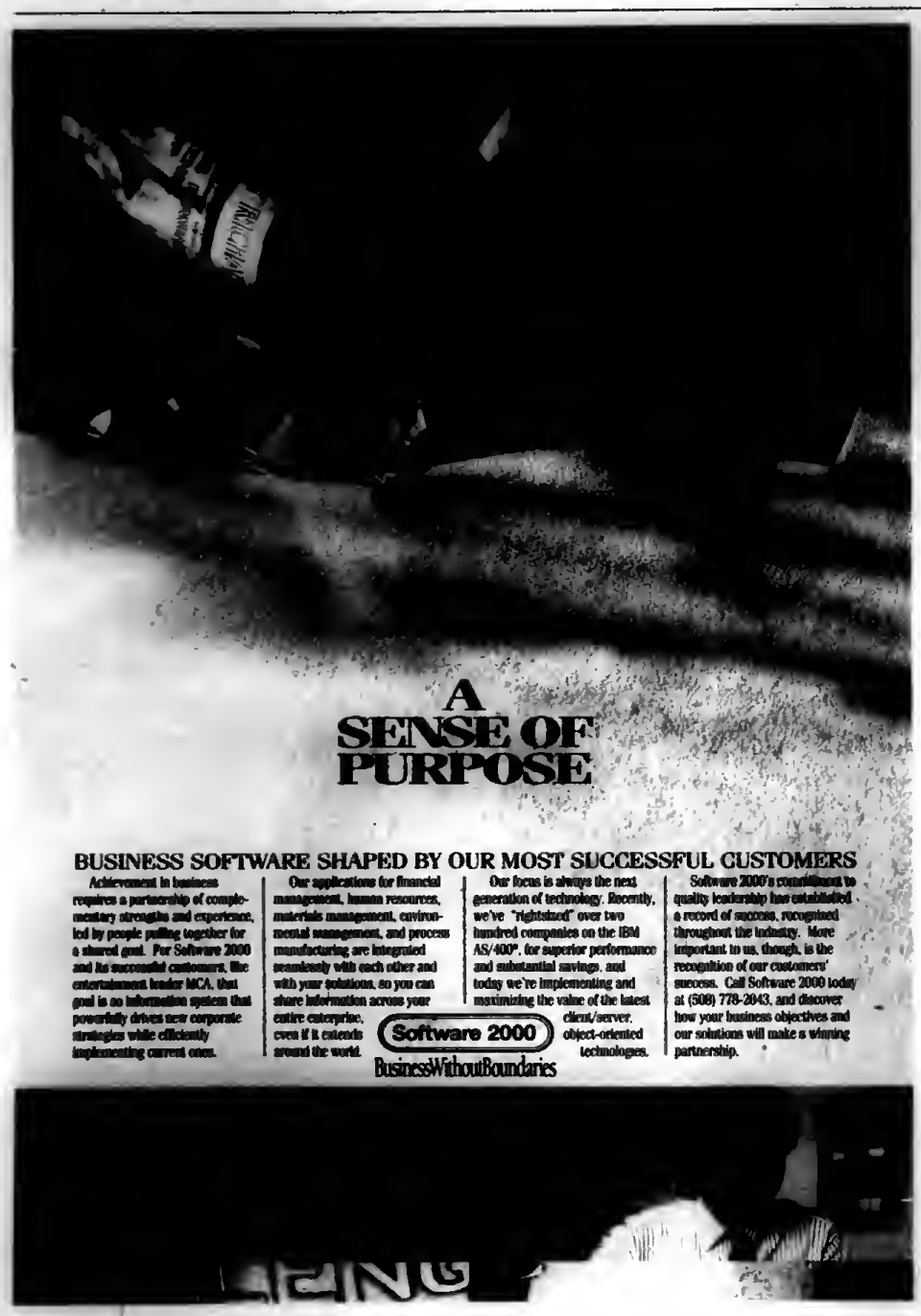
"CEOs of the future are going to have a significant amount of multifunctional, cross-functional background," she said. "That's something that you learn in IS because systems supports the whole enterprise."

But don't get too excited, cautioned Nancy Wendt, an IS consultant in Greensboro, N.C. Chief information officers "are at a tough juncture," Wendt said. "They're at the survival point. It's not the time to worry about where to go after IS."

Hudson gained international attention for arranging the 1989 landmark outsourcing deals between Kodak and IBM, Digital Equipment Corp. and Businessland, Inc. Most recently, Hudson served as vice president and general manager at Kodak's professional printing and publishing imaging division. She worked in finance, legal, public affairs, investor relations and general management before being named head of a new corporate IS group in 1987. In that role, Hudson oversaw 3,000 employees and a $500 million annual budget.

Albert F. Turner, an analyst who follows Kodak for Duff & Phelps in Chicago, said that although Hudson played a large role, her departure was unlikely to disrupt business too greatly.

"Eastman Kodak has a lot of soldiers ready to fill the ranks," he noted. "They are not going to have any difficulty in filling this position."



“We were born mainframers. Then Micro Focus introduced us to a new way of life.”

Mark Mroz and Dan Hendricks
Consumer Information Management AT&T

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Dan Hendricks and Mark Mroz in Consumer Information Management at AT&T are part of a 1000 strong programming staff in Piscataway, New Jersey.

As mainframe programmers, they both know what it's like to be 300th in line for compilation.

"A typical fix to a program, maybe a quick edit and compile or something, could easily take you half a day on the mainframe," says Mroz.

They began using the Micro Focus Offloading Solutions two years ago and found "everything we could do on the mainframe we could do with Micro Focus COBOL." The PC is so much faster. There are still times when I have to go back to the mainframe, but I really do not like it. I try and steer clear of it, if possible."

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GSA Contract Number GS00K93AGS6403.

Apple tries to fire up Newton developers

By James Daly
SANTA CLARA, CALIF.

Four months after Apple Computer, Inc. launched the Newton personal digital assistant, the company last week gathered more than 1,000 developers interested in crafting applications for the product line and bluntly said the machine's success or failure rests squarely on their shoulders.

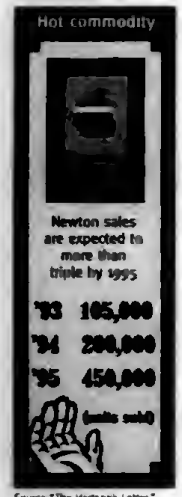
"This industry is based on content," President Michael Spindler said at the Newton Platform Development Conference. "We need your applications to foster the communication that Newton is all about."

Spindler acknowledged that the Newton MessagePad, the line's first product, has been hit with critical barbs since its introduction at this summer's Macworld Exposition.

He compared its rocky reception to the early days of television, when the technology was awkward and incomplete and gave no hint of the immense societal changes to come.

To make Newton appealing to corporate America, analysts said, Apple needs to fill critical gaps, including a software developer's kit that is still in beta testing and the lack of two-way paging capabilities.

"It's hard for companies to commit when the pieces aren't all in place," said Pieter Hartsook, editor of "The Hartsook Letter," a Macintosh-specific newsletter in Alameda, Calif.



Source: "The Hartsook Letter," Alameda, Calif.

That discrepancy is going to make the Newton a tough early sell to the "business professional," whom Gaston Bastiaens, vice president of Apple's Personal Interactive Electronics Division, said represents the Newton's target market.

Hartsook said he expects most of the key components — including full delivery of connectivity components — to be available within six months.

Until those pieces are in place, some Macintosh fans will look on the Newton as a fascinating piece of technology but not a critical business tool.

"If they start improving their digital and cellular communications capabilities, then they may have something really appealing and we'll give it a harder look," said Dr. Warren Young, director of neuropharmacology computing at the Scripps Research institute in La Jolla, Calif. Young has considered outfitting nurses and doctors with the Newton.

Budget constraints

The MessagePad's success will hinge on Apple's ability to convince users that they cannot live without its "anytime, anywhere" capabilities. That could be a tough sell in a land where corporate information systems budgets have tightened considerably in the past two years.

"I'm more interested in putting full-fledged workstations on desks than getting the Newton in the hands of users," said Dr. Steven Erde, director of academic computing at Cornell University Medical College in New York.

The upcoming enhancements are great, some users said, but Apple still needs to work on some of the basics.

"It's still agonizingly slow," said Bruce Gordon, a designer at Walt Disney Imagineering in Glendale, Calif. Gordon then spent two minutes trying to beam his business card from his Newton to another Newton user about 2 feet away. After several unsuccessful attempts, some shrugs and a smirk that hinted he has done this before, he reached into his wallet and pulled out a traditional paper business card.

Follow the script

Also still troubling is the lack of a final software developer's kit. The Newton operating system, called Newton intelligence, demands that independent software vendors develop applications from scratch using the Newton Toolkit. The Toolkit has its own object-oriented programming language, called NewtonScript, that enables developers to program functionality as a series of reusable objects.

Developers said the beta developer's kit works fine for developing applications, but the lack of a final version could cause corporate users to hesitate. The delay in making a kit available represents the classic conundrum when attempting to establish a new operating system platform: Users will buy it only if a wide range of applications are available, but software vendors will develop applications only if there is a large installed base of users.

While only about 10 applications are now for sale for the Newton, 30 others are nearing release. Apple officials said about 2,000 developers are active in Newton development. That is an impressive number for a device with an estimated installed base of less than 100,000.

"It took Hewlett-Packard two years and 325,000 palmtops to interest that many developers," said Jeffrey Henning, a senior industry analyst at BIS Strategic Decisions in Norwell, Mass.

Spindler said the company had shipped 50,000 Newtons by the end of the September, but he said he would not release recent sales figures until after the first of the year. "We're pretty satisfied with sales," he noted.

Consultants say Microsoft may one-up Apple in PDAs. See column page 46.

Next Newton

Apple analysts said they expect to see several additions to the Newton product line next year, including the following:

- The NotePhone from Rolm Corp., which is a standard analog phone with a docking station for a MessagePad. Expected price: $900 to $1,000. Shipment: June.
- A larger and heavier model (8 by 10 in. and weighing about 3 pounds) geared toward vertical applications such as data collection tasks within a company. Expected price: $900 to $1,000. Shipment: June.
- A slim MessagePad powered by four AA batteries. Price: $500 to $600. Shipment: first half of 1994.

—James Daly

HP support for NT

CONTINUED FROM COVER 1

NT commitment above the PC level. The company now appears to be hedging its bets, positioning itself in the event that NT catches on in the workstation and minicomputer markets, analysts said. Interest in NT by PA-RISC licensees is also forcing HP's hand.

"We cannot ignore the existence of NT or its gradual evolution, nor can our partners," Rosenbladt said.

"NT has a strong history with the Intel environment and therefore requires this [little endian] type of architecture," he continued. "Today, it is prudent to develop microprocessors that can do both" byte-ordering schemes.

Rosenbladt noted, however, that Microsoft is not working with HP on the byte-ordering project.

HP's forthcoming "bi-endian" design will continue to support software written for PA-RISC machines while easing support for software written for NT and other Intel-associated operating systems.

Industry analysts agreed that HP anticipates a shift in the workstation market once rivals Sun Microsystems, Inc. and IBM field workstations that run NT next year. Digital Equipment Corp. and workstation start-up Netpower, Inc. already sell NT RISC machines; they were designed around Alpha and Mips Technologies, Inc. RISC chips, respectively.

Live demonstration

Linley Gwennap, editor of the "Microprocessor Report" in Sebastopol, Calif., said HP gave a back-room demonstration last month at Comdex/Fall '93 of a workstation running NT software using a bi-endian, trimmed-down version of PA-RISC, called PA-RISC 7100LC.

But the LC, or "low-cost," version will not appear in HP's multiuser systems because it runs at a maximum of 75 MHz, well below the 90-MHz speeds HP uses widely today in its minicomputers, HP said.

On the plus performance side, however, HP will use a 48-bit design on the LC chip, compared with the 32-bit design on today's PA-RISC, the company said.

"The LC is suited to desktop systems but not really designed for larger systems," Gwennap said. "It has a smaller cache and doesn't have the same performance as the high-end chips. But the implication is in the future, they could put it on a PA-RISC server."

Users and analysts noted that the bi-endian development gives HP a nearly ready-to-go entree into the NT market with its workstations and minicomputers and that HP will complete a port when NT takes hold in those markets.

"NT is not taking the workstation market by storm," said Bill Bluestein, director of Computing Strategy Research at Forrester Research, Inc. in Cambridge, Mass. "NT will probably build up a core of application support in that area, but it's certainly not the case now. I think HP wants to be ready."

Analysts further noted that the 7100LC chip should gain HP entrance into the low-end workstation market, where it does not have a sub-$5,000 offering to compete against boxes from Digital, IBM, Silicon Graphics, Inc. and Sun.

On the workstation and minicomputer levels, "HP is probably hedging their bets," said Sam Ellis, associate vice president of information services at Portland Community College in Portland, Ore. "But they're not going to bet their corporate farm on it."

Ellis, whose HP equipment includes a large Unix version of HP's mainframe alternative Corporate Business System, said NT is a long way from his own multiuser plans.

"This is a bid for market share by HP, but they're not turning their back on their current user base," said Eric Fisher, principal at Fisher Systems Consulting in Groton, Mass.

Fisher further pointed out that the bi-endian design opens the way for supporting other Intel-associated operating systems. "That includes OS/2, Chicago, Cairo — all of those things," Fisher said. "And if you really want to hold your nose, it includes DOS."

Users are both concerned and excited about HP's post-RISC era. See story page 72.

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SmartSuite to get Notes

Competition with Microsoft's Office 4.0 cited in Lotus decision

By Michael Vizard

■ After much in-house debate, Lotus Development Corp. is preparing to deliver in the first half of next year a shrink-wrapped edition of SmartSuite that includes Notes, according to Lotus Executive Vice President Bob Weiler.

Lotus' decision to include Notes as part of the suite is being driven by its need to provide a highly integrated suite of applications to compete with Microsoft Corp.'s Office 4.0. Microsoft is expected to deliver all the major elements of Office 4.0, which supports Version 2.0 of its Object Linking and Embedding (OLE) interface, by the end of the year.

"We standardized on Microsoft Office before we got Notes. But given the direction of Notes and SmartSuite, we're starting to wonder if we made the right decision or not," said Bill Woods, an information systems manager at Smithkline Beecham Corp. in Philadelphia.

Previously, Lotus bundled Notes with SmartSuite only to selected high-end IS shops. Some Lotus marketing executives said as recently as three weeks ago that bundling distributed database technology within a PC application suite would not make sense.

But Lotus is now looking to broaden its edge in the area of collaborative computing by pushing Notes through higher-volume reseller channels.

Weiler said IS shops should not expect Lotus to deliver a massive price break for sites opting to purchase a SmartSuite edition that includes Notes.

According to Weiler, Lotus does not feel compelled to lower Notes pricing to generate higher volumes because it believes its rivals do not have comparable offerings. Lotus positions Notes as an environment in which users will live as they access documents created in word processors, spreadsheets, presentation graphics packages and other applications.

Notes resellers have been lobbying Lotus to adopt a client/server pricing model that mirrors the one most SQL database companies employ. That model would price Notes clients lower than Notes servers, thereby boosting volume. Currently, a Notes license costs $495 and can be used as either a client or a server.

Weiler maintained that current volumes do not seem to support that model in terms of guaranteeing a profit for Lotus.

Messaging groupware

Meanwhile, Microsoft is working to deliver a groupware offering around its forthcoming Electronic Messaging Server (EMS) running on top of SQL Server on Windows NT. But that offering will serve only to extend Microsoft's electronic-mail capabilities, as opposed to competing with the Notes multiplatform distributed database services, said Mark Tebbe, president of Lante Corp., a reseller of Notes and Microsoft products based in Chicago. And Lotus is working to counter EMS with a client/server edition of CC:Mail.

However, some resellers said changing technology may force Lotus to ultimately concede the Notes pricing issue. As applications that use distributed technologies such as OLE 2.0 come to market in 1995, PC applications should be able to directly access Notes servers without requiring a local Notes client, said Robert Davis, a director at New Information Paradigms Ltd. in the UK.

Reporter's Notebook

Although Lotusphere attracted a veritable Who's Who of attendees from Fortune 1,000 companies, even Lotus' best efforts couldn't keep a Notes forum up and running smoothly for four days.

The Notes server used by attendees at the show crashed for an extended period at least once, had to be rebooted several times, was subject to sluggish performance and at one point fell victim to a virus sent over electronic mail that crashed every Notes session on the network.

One of the reasons Lotus has had trouble maintaining a consistent level of Notes support may actually lie in the prices it charges for consulting. Because Lotus consultants typically get paid about $100 per hour, the more knowledgeable ones discover they can venture out on their own and charge considerably less than Lotus.

Two of the larger vendors to join the Notes bandwagon last week were Wang Laboratories and, as expected, Powersoft. Close to three quarters of Powersoft's installed base has Notes installed, said Bill Critch, Powersoft director of business alliances.

Edge Research, a start-up founded by Mark Klein in Portsmouth, N.H., who also founded Channel Computing, has developed a highly polished alternative application programming interface for Notes. The company's first offering is a tool for linking Visual Basic applications to Notes, which Edge Research will give away to customers. However, Edge Research will charge for support calls.

Notes

CONTINUED FROM COVER 1

ecutives had claimed that the return on investment (ROI) for Notes was as high as 400%, based on results from eight companies that installed Notes for one year.

"The big bang for the buck in terms of ROI comes from companies with relatively small investments. The return tends to moderate at the larger companies," said Scott McCready, an industry analyst at IDC.

Despite the long lead time to recoup the investment, however, corporate buyers are still lining up to buy Notes. "Purchase plans still exceed hundreds of thousands of copies," McCready said.

Process re-engineering

In fact, many information systems executives said traditional ROI models do not really apply to Notes. "Notes requires a three- to five-year commitment, and the only measure that really matters is changing the business," said Seth Pinsky, an IS manager at Sandoz Pharmaceutical in East Hanover, N.J. "You need to focus your efforts on one or two applications that will change the business cycle."

Pinsky said many Notes installations fail to achieve specific ROI targets for Notes because their implementation goals are too vague for what is essentially a set of 1G-byte distributed databases. Instead, many sites approach Notes like an extension to their electronic-mail system that is deployed in search of an application, as opposed to an environment that has to be managed like any other database, he said.

"Notes becomes a different type of animal at the enterprise level, and it grows everywhere. You have to make sure the technology doesn't outpace your ability to support it," said George Goldsmith, president of the Human Interface Group in Wethersfield, Conn.

Despite these caveats, large IS organizations are still plowing ahead with Notes deployment.

"Notes is a required technology platform for everybody. You can apply an ROI to specific tasks, but ROIs don't take into account the investment in technology people are making for future applications," said John Faig, an industry analyst at Meta Group, Inc.

For example, Boston Chicken is deploying 2,000 copies of Notes to link its restaurants with its corporate IS headquarters in Chicago.

Duly noted

A survey of 70 companies that have worked with Notes for one to three years found most sites still waiting for their investment to pay off

Return on investment (ROI)	Companies
100% or more	10%
80% to 100%	20%
60% to 80%	40%
40% to 60%	20%
30% to 40%	5%
Less than 5%	5%

Source: International Data Corp., Framingham, Mass.

At the same time, the telecommunications division of The Travelers Corp. in Hartford, Conn., plans to deploy up to 210 Notes copies in the first quarter, said IS manager John T. Murphy. "We'll have one Notes server and treat it like a glass house," Murphy said. Overall, the firm has 1,000 Notes users accessing five servers.

And the Canadian National Railway system is using Notes to track its efforts to re-engineer the railroad using technology acquired from the Sante Fe Railroad Co., according to systems manager Glenn Chafe. The railroad is using Notes as the primary vehicle for keeping track of the specific jobs on the $150 million, four-year project.

Cooperative cartel

Meanwhile, Lotus chief executive officer Jim Manzi said Notes will be one of the technologies that fosters the creation of "electronic *keiretsus*" among companies. *Keiretsu* is a Japanese term for a cartel of suppliers and customers who work cooperatively together.

Partly with that goal in mind, QCS Development Co. in Valbonne, France, plans to use Notes as part of a clearinghouse for buyers and manufacturers that will allow retail stores to order goods from suppliers in the Far East, said IS manager Steve Roessingh.

Version 3.1 of Notes will ship about 30 days after Lotus delivers Notes on Solaris 1.1 from Sun Microsystems, Inc. in January. Lotus' first Unix implementation was originally due in this quarter but has been delayed slightly due to testing.

Take Notes

Upcoming upgrades:

Notes 3.1
- NLM support
- TCP/IP
- SPX-2 for Windows
- CD-ROM install
- ScreenCam audio files
- Packaged vertical applications

Notes 4.0
- Redesigned user interface
- CC:Mail integration
- OLE 2.0
- Simpler replication procedures
- Agents for automating tasks
- LotusScript development language
- Improved scalable performance

Guide to groupware begins on page 101. Corporate Software ties Microsoft apps to Notes. Page 49.

Novell messaging

CONTINUED FROM COVER 1

end clients and wide-area services [CW, Sept. 13].

The Da Vinci pact is meant to assure customers of a high degree of integration between front- and back-end messaging pieces and provide a single point of support, like they receive in single-vendor solutions, a Novell official said.

However, while Da Vinci is a third-place player in most LAN surveys, its strength is mainly in small businesses, not in the corporate market.

Furthermore, "displacing the leading players will be very difficult because most big companies already have set their LAN E-mail standards, and they aren't MHS-based," said Chuck Stegman, a principal analyst at Dataquest, Inc.

In a recent study of 200 medium- to large-size companies, 71% said they had standards in place, but only 2% mentioned having any MHS-based products, Stegman said.

"What's hurt Novell is its lack of marketing and inability to build demand in the NetWare marketplace," said Terrence McCarthy, managing director of Neoteric, Inc., a systems integrator in New York.

Additionally, the messaging landscape very likely will change next year when Microsoft saturates the messaging market by bundling E-mail clients for free in its next version of Windows.

"If Microsoft only gets 25% of Windows users to upgrade, that's 20 million copies of Microsoft Mail out there. Even though the back end will be open, that would entice a large user to consider a Microsoft back end for support reasons," said Jim Lisiak, a software engineer at Chevron Information Technology Co. in San Ramon, Calif.

Although tight network operating system and messaging integration would be a bonus, it is not enough to draw the city of San Carlos, Calif., which recently standardized on Lotus' CC:Mail, said Brian Moura, an assistant city manager. "The key is most E-mail packages can read the NetWare bindery. In CC:Mail, that process is not as smooth as it can be, but it's easy enough."

Ultimately, the lack of strength in enterprise messaging could hurt Novell's network operating system sales.

"They can do well for a while without an interesting strategy because they have a huge LAN market share, but it'll hurt them when Microsoft comes out with a stronger back-end operating system," said Sara Radicati, president of the Radicati Group, a consulting company in Palo Alto, Calif.

But McCarthy said that although Novell's marketing is weak, its MHS products are strong. In fact, several large customers have standardized on MHS and either Da Vinci E-mail or Beyond, Inc. E-mail clients, including Guiness North America and Revlon, Inc., he said.

X.500 or not?

Although Novell's Global MHS messaging directory will tightly integrate with the NetWare Directory Services (NDS) in NetWare Version 4.01, for users the question is how easily the information will integrate with other systems' directories.

Novell claims NDS and Global MHS are based on the X.500 directory standard. NDS and MHS architecture is like X.500, but Novell built the directories on its IPX and SPX stacks so they are no longer protocol-compliant with X.500, which lives on top of an Open Systems Interconnect or TCP/IP stack.

"The point is that because of the way Novell has done it on the wire, if you can capture their packet, it's not compliant and understandable by an X.500 implementation," said Sara Radicato, president of the Radicati Group and a principal designer of the X.500 standard.

However, Novell has assigned an application programming interface to its directory that is very similar to the X.500 API, so it would be easy to write software that goes between the two, Radicati said.

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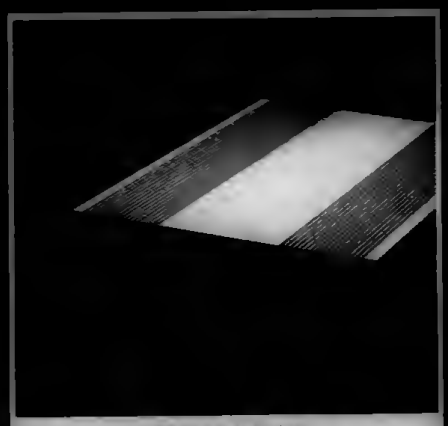

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News Shorts

WordPerfect names new CEO

Alan Ashton, **WordPerfect Corp.**'s co-founder and chief executive officer, is moving up to co-chairman on Jan. 1 and will be replaced by Adrian Rietveld, who had been senior sales and marketing vice president. Ashton said WordPerfect needs a more aggressive CEO as it restructures operations next year.

CA ships OS/2 project package

Computer Associates International, Inc. last week began shipping CA-SuperProject for OS/2, a native 32-bit project management application designed to exploit OS/2 strengths such as the WorkPlace Shell, preemptive multitasking and enhanced memory management. The package provides binary compatibility of SuperProject files across four platforms: OS/2, Windows, DOS and Digital Equipment Corp. VAX/VMS.

New notebooks from NEC

NEC Technologies, Inc. introduced the Versa E notebook series, which features faster processors, accelerated local-bus video and three- to five-hour battery life on its thin-film transistor, active-matrix color model. NEC has also built in an integrated trackball for its latest-generation notebook. NEC is the second major vendor after **Toshiba America Information Systems, Inc.** to use **Intel Corp.**'s SL-enhanced 20/40-MHz DX2 and 25/50-MHz DX2 in a notebook line.

Tate leaves MMA

Priscilla Tate has left her position as executive director of the **Microcomputer Managers Association** (MMA) in Warren, N.J., to concentrate on independent consulting. Alex Kask, a founder of the MMA and former president, became interim director.

France Telecom, Bundespost team

France Telecom and Germany's **Deutsche Bundespost Telekom** last week said they have signed an agreement to cooperatively provide X.25, frame relay, Internet Protocol, virtual private network, very small-aperture terminal and other services throughout the European Community bonded by a common network management system. The single-backbone venture, slated to be operational by 1995, falls short of rumored expectations last month that the two European telecommunications giants would pull AT&T into the fold.

Stikeleather to consult

Jim Stikeleather, director of systems development at **Kash n' Karry Food Stores, Inc.** in Tampa, Fla., resigned to join Tampa consulting firm **Technical Resource Connection, Inc.** Stikeleather was the force behind Kash n' Karry's leading-edge development with object technology and public domain tools.

SHORT TAKES **Viasoft, Inc.** and **Seec, Inc.** announced a joint technology and marketing agreement that will integrate Seec's Windows-based Cobol products with Viasoft's Existing Systems Workbench for maintenance and redevelopment of existing Cobol systems. ... **KnowledgeWare, Inc.** will next week begin shipping its NorthStar re-engineering tool, which allows developers to capture business logic from existing programs for analysis and migration to KnowledgeWare's Application Development Workbench. ... **Intel Corp.** and **SynOptics Communications, Inc.** said they will announce an agreement to jointly develop and market 10M/100M bit/sec. Ethernet products. ... **Eo, Inc.** bought **Pensoft Corp.**, which makes an application that runs on the AT&T EO Personal Communicator. ... This month marks the final shipment of AT&T 3B2 minicomputers, which totaled more than 70,000 units in 10 years.

TVA overhaul

CONTINUED FROM COVER 1

months," he added.

Malec said the overhauled IS department must help TVA respond to the "sea change" of deregulation, which is introducing competition in the electric utility industry. The end of monopoly status requires electric utilities to slash costs, radically re-engineer business processes and replace old information systems with ones that support the new way of doing business, said George M. Hill, the Phoenix-based head of Andersen Consulting's utilities practice.

Prior to last week's reorganization, the IS department was divided along business lines, such as power generation and marketing. That meant the IS groups at the Knoxville-based utility were building redundant and incompatible systems, such as those for personnel, for each of the business lines, according to Jack Flack, who has the new title of information technology architect

New roles

The new-wave organizational chart clarifies the roles of IS professionals by allowing technical experts to focus on technology and creating a separate group of "strategic consultants" to build better relationships with the business units.

The consultants will have the full-time job of "interacting with the key opinion leaders [in the business units] to identify strategic IS opportunities we're missing now," said Robert L. Yates, TVA's vice president for information services and head of the 925-employee IS department.

Previously, that sort of strategic thinking was supposed to be done by line managers, Yates said, "but you can't expect them to do it in their spare time because there is no spare time."

By separating the roles of technologists and business consultants, the consultants can recommend IS applications without any bias about what technology — such as mainframes or PC networks — to use, Yates explained. Otherwise, it is human nature for technologists to recommend their pet platform without regard to business needs, he said.

The restructuring is just the latest in a series of efforts to reform the IS department. TVA's previous IS executive centralized the then-scattered IS department, but that offended the business units, Flack said.

The previous chief also started to drag the IS department away from IBM mainframes and into client/server computing on smaller platforms. He signed a $16 million contract with Oracle for software licenses, Flack said, which alienated the mainframers, who felt management was "shoving Oracle down their throats."

TVA's inspector general is investigating the Oracle contract due to allegations of collusion and kickbacks, TVA sources said. In addition, the inspector general is probing allegations of improper procurement of a PeopleSoft, Inc. payroll system [CW, June 21].

Still pending

Jim Reed, manager of financial investigations in the inspector general's office, declined to provide details but said investigations of the PeopleSoft and Oracle contracts will be resolved soon. Flack said the IS department was cleared of wrongdoing in the original Oracle contract, but certain revisions to the contract are still under investigation.

In August 1992, Malec brought in Yates, who had been corporate treasurer, to "clean up the mess" in the IS department, according to sources. Yates said he found a department with "a lot of turf battles, no clear-cut domains and built-in conflicts of interest," which is why he forged ahead with the reorganization.

Yates said he expects the new organization to be stabilized — and produce tangible results such as better client satisfaction — in three to six months. The next big step will be billing the business units for IS services so they recognize IS is not a free resource, IS officials said.

TVA closely followed a blueprint developed by IS management consulting firm N. Dean Meyer and Associates, Inc. in Ridgefield, Conn. However, Yates said he opened the process to employee input rather than keep it secret until the announcement. Employees in TVA's IS organization are represented by three unions, so Yates said it was crucial to get union buy-in for the restructuring.

West Coast correspondent Kim S. Nash contributed to this report.

Power conversion

TVA's IS unit was broken up into the following four groups:

- **"Service bureaus" that handle the data center, network operations, PC-user support and IS administrative functions.**
- **A pool of "technologists," including database administrators, systems programmers, applications specialists and technical experts in fields such as security, artificial intelligence and computer-aided software engineering tools.**
- **A "consultancy" of about 30 people to help business units with IS needs assessment and financial analysis, as well as market the IS department's capabilities.**
- **A small office of IS "architects" to facilitate the development of corporate technology standards, which are sorely lacking at TVA.**

Sun sets on technical users?

By Jean S. Bozman
SAN JOSE, CALIF.

Technical users at last week's Sun User Group said they feel their vendor has shifted its focus to commercial sites and is leaving them behind.

Sun Microsystems, Inc. appears to be more interested in commercial users than in its original cadre of scientific and technical installations, some of the 200-plus attendees said.

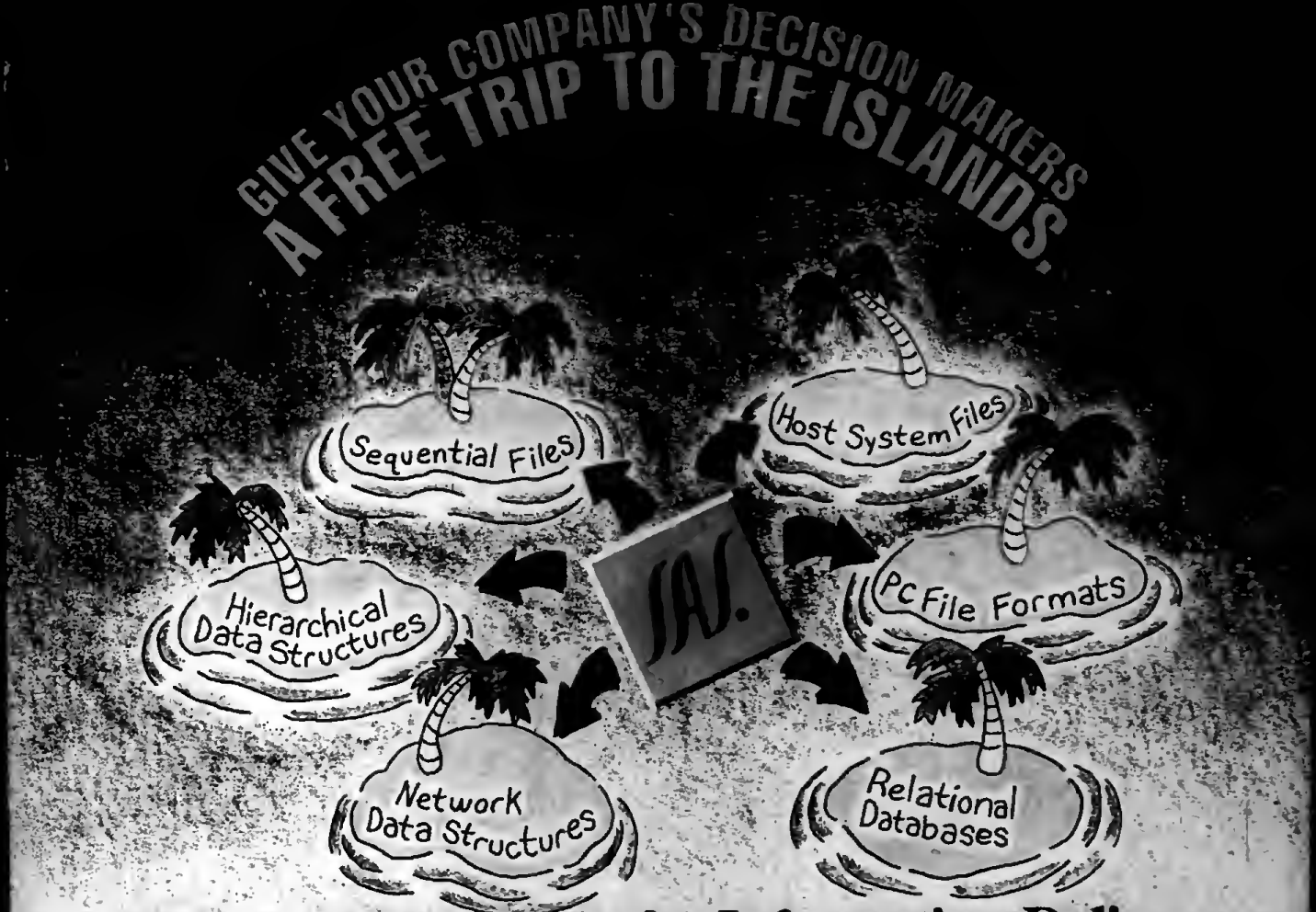
"Sun is selling a lot of Classics and LXs to people who don't know about Unix," said Gene Rackow, a systems manager at Argonne National Laboratories in Argonne, Ill., and a user group board member.

Some users are toying with the idea of moving to other Unix computers when their Sun hardware wears out. "Why do I buy a Sun when I'm changing my environment [to Solaris 2.3] and my users have to learn again?" asked Michael Pearlman, a systems manager at Rice University in Houston.

Other users said they see machines from Hewlett-Packard Co., IBM and Silicon Graphics, Inc. making headway. "Now we're beginning to see [end users buy] many other workstations," said S. Lee Henry, a Johns Hopkins University systems administrator.

"We are 95% SunOS and 5% Solaris 2.x," said Govind Desale, a network systems manager at National Semiconductor Corp. in Santa Clara, Calif. "Because we have SPARC compilers and packaged applications, the cost to convert would be small."

A Sun spokesman said the firm is taking a balanced approach. He cited graphics enhancements and new higher speed SPARC-based systems that should appeal to both technical and commercial users.



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Tandem tries to make nets more dependable

By Jean S. Bozman
CUPERTINO, CALIF

Tandem Computers, Inc. and its Ungermann-Bass, Inc. subsidiary last week launched a fault-tolerant networking system for PC LAN applications, the first in a series of products that the firms said would make client/server computing more reliable.

The two firms plan to extend Tandem's fault-tolerant hardware features, which were built to run on its proprietary NonStop operating system, to network wiring hubs and PC LANs made by other vendors. Users installing the products could reduce client/server application outages by up to 80% [CW, Dec. 6], according to Tandem, which said it gauged the reliability boost using a self-developed 1,000-user LAN model.

"We need to get to a point where we get client/server dial tone," said Gary Sabo, Tandem's director of product marketing for open access systems.

The NonStop Access for Networking line is a set of products, intended to work in concert, that extend the redundant LAN connections available in Tandem servers to the desktop. Dual-port Ethernet adapter cards for client PCs link concurrently to a pair of Ethernet wiring hubs. Should a path or a hub go down, the adapter automatically switches to the alternate path or mirrored hub, preserving the PC's session with the server, the vendors said.

Users can buy the $199 MasterLAN FT Ethernet cards for any brand of PC LAN. The firms said they may later license to other vendors the software algorithms embedded in the Ethernet cards and hub controllers.

Looking ahead

One longtime Tandem and UB site, the Coffee, Sugar & Cocoa Exchange in New York, plans to use the products for LAN applications slated to go into production early next year, said Phat Leung, the exchange's director of systems and planning.

Tandem built many elements of client/server technology early, analysts said, but has not capitalized on these strengths — or on its ownership of UB.

"Tandem is trying to make waves in the marketplace to show they're very much in the [client/server] mainstream," said George Weiss, a vice president at Gartner Group, Inc.'s Mid-Range Computing Strategies group. "They need to supplement the hardware for fault-tolerant hubs with software."

All in favor

Ungermann-Bass Chief Executive Officer Roel Pieper, on the job for three months, said last week he was reorganizing the Tandem subsidiary into three units: one for systems integration and network services, one for network management services and one for building networking gear such as switches and hubs.

Rival approach

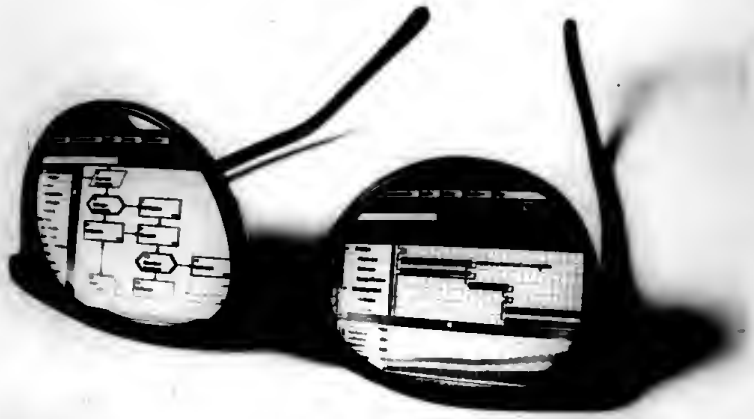
Tandem rival Stratus Computer, Inc. in Marlboro, Mass., has taken a software-oriented approach to building fault tolerance into Novell, Inc. NetWare LANs. The company is beta-testing NetWare for Unix software, which would enable Stratus machines to bring fault tolerance to NetWare servers [CW, Aug. 2].

Separately, Ethernet switching pioneer Kalpana, Inc. last week introduced a two-tiered approach to bullet-proofing its EtherSwitches, internetworking devices that allow users to dedicate an Ethernet's worth of bandwidth to one or a few resources to boost network throughput.

Users can purchase a $7,500 to $9,500 device consisting of completely redundant EtherSwitch components, all operating in parallel.

The second option is to pay an extra $1,000 over the cost of a standard $2,000 EtherSwitch chassis for dual-power supplies only.

Senior Editor Joanie M. Wexler contributed to this report.



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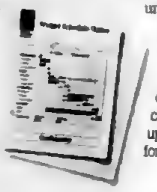

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Middleware brings host data to PC apps

By Johanna Ambrosio

Middleware unveiled last week by Early, Cloud & Co. promises to give mainframe applications a kinder, gentler means of achieving client/server nirvana.

With Message Driven Processor (MDP), users will be able to tap into virtually any host-based application that supports IBM's CICS and bring the data into almost any PC-based application, according to officials from the Newport, R.I., company.

Available immediately for a limited number of customers, MDP sells for a minimum of $40,000 because services are bundled with the very complex package, which includes 250 programs and some 400,000 lines of code.

The software message-oriented middleware simplifies the data-gathering process from both an end user's and programmer's perspective, officials said.

"When a client machine makes a request, MDP takes the message, opens up the envelope, defines the tasks needed to answer the question, taps the back-end systems and puts the answer back into the envelope, and sends it to the client machine," said Gary Krueger, vice president of sales and marketing. With workflow automation part of MDP, all of this happens behind the scenes, he added.

The approach MDP takes differs from that of remote procedure calls (RPC), Krueger said. While RPCs require clients to wait for the reply before they can proceed to other processing, MDP does not, he said.

"With MDP, the client can go on and do other things while waiting for the answer," Krueger said.

Early interest

At least four large banks are beta-testing MDP, which is based in part on a previous Early, Cloud package that automates the customer service function, Krueger said.

First Bank Systems in Minneapolis is not yet using MDP but is "very interested" in it, said Bernard McGarrigle, vice president of emerging technologies at the bank, a longtime user of Early, Cloud telemarketing software.

"Right now our applications are terminal-based, and we want a workstation-based environment," he said; MDP will likely "expedite that process for us."

Similarly, Norfolk Southern Corp. in Atlanta has been using Early, Cloud's telemarketing software in its customer service center, said Allen Childress, assistant vice president at the transportation concern.

Onward and upward

Founded in 1981 as primarily a services firm, Early, Cloud has some 110 customers and 170 employees worldwide. The private company, in which IBM has a 20% to 30% equity stake, expects to make around $20 million in revenue this year, up from $7 million in 1990.

To help answer customers' questions about the status of their shipments, "we are extrapolating data from several applications and bringing them down to an intelligent workstation with a graphical user interface." MDP, or something like it, would help with that effort, he said.

MDP, available now for any MVS-based mainframe that also runs CICS, will be delivered next year for other CICS platforms, including OS/2 and AIX. Others will follow.

Satisfying the client

On the client side, MDP supports development tools, including Microsoft Corp.'s Visual Basic, Easel Corp.'s Workbench and Powersoft Corp.'s PowerBuilder.

The basic MDP set includes an application development environment with a work-flow management tool set, a run-time environment, technical support and maintenance.

The major component of the development environment is a script builder that contains executable objects that fulfill the client's request.

Scripts are created in the development environment and executed in the run-time environment.

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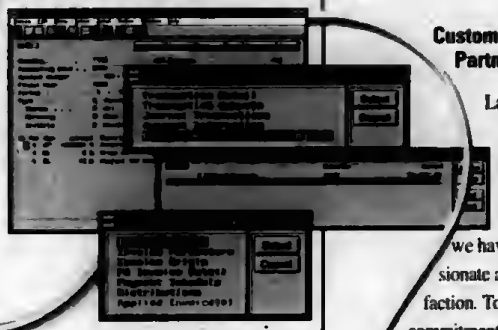

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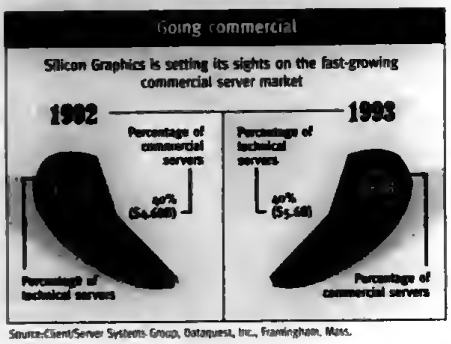
SGI takes Challenge to commercial mart

By Jean S. Bozman

Seeking to further diversify its scientific/technical roots, Silicon Graphics, Inc. (SGI) plans early next year to make a splashy push into the commercial database server market.

The move could signal an aggressive stance by $1 billion SGI against $4.3 billion Sun Microsystems, Inc., which sells many high-end machines to commercial sites as database servers, said Tony Iams, a research analyst at D. H. Brown Associates, Inc. in Port Chester, N.Y.

SGI will elevate its commercial presence by getting systems integrators to pitch its Challenge server as a high-speed, high-capacity database engine aimed at a variety of computationally intensive applications, including multimedia. SGI began diversifying its business last summer when it formed its Information Products Division (see story at right).



Source: Client/Server Systems Group, Dataquest, Inc., Framingham, Mass.

Feedback for fine-tuning

SGI is already working with systems integrators to test its database server strategy, which combines Challenge machines with multiple gigabytes of data, major relational databases and redundant arrays of inexpensive disks storage devices for high-availability. SGI needs the feedback it gets from systems integrators to fine-tune its database strategy, said Ihab Abu-Hakima, the Information Products Division's marketing director.

Multimedia applications that apply three-dimensional graphics to the task of analyzing large databases with up to one terabyte of data are being tested by some integrators, said Terry Trent, a vice president at SAIC in La Jolla, Calif. Visualization of patterns stored in user databases using Oracle Corp. and Sybase, Inc. database engines, is also being tried.

Visualizing is key

"You can fly through your corporation," said Jim Presley, regional operations manager at Electronic Data Systems Corp.'s High-Tech Industry Division in Pleasanton, Calif. Visualizing a business model, he said, "can show a corporation what they need to do to get their financial systems in tune, or what type of information their sales organization should be providing to them and how often."

Early users said the SGI machine's high performance and big database capacity outweigh concerns about the price tag, which ranges from $69,000 to more than $790,000 for a 36-processor Challenge machine. In contrast, Sun's SPARCcenter 2000 ranges from $95,000 to $197,600.

Both SGI and Sun are trying to shake their images as technical workstation vendors. But SGI may try to leverage its high I/O specifications and high-resolution 3-D graphics into database pluses, analysts said. "They definitely have an edge," Iams said. "SGI [machines] have buses with enormous bandwidths to push pixels around." A SPARCcenter 2000, which is a symmetrical multiprocessor with about 500M byte/sec. of I/O bandwidth, would be outpaced by a high-end SGI Challenge and its 1.2G-byte/sec. aggregate bandwidth, Iams said.

SGI plans to bank on benchmarks to show that Challenge machines provide better overall price/performance than the less costly symmetrical multiprocessor servers from Sun and other Unix vendors. "The key to their success is going to be that the cost of their transactions per second will be way down compared to others," said Donald Feinberg, a program director at Gartner Group, Inc.'s Software Management Strategies Group in Santa Clara, Calif.

Some users said they are considering the plan. One information systems planner at a large petrochemical company said SGI recently stopped by to present its database plans. "That new machine they've got has a high-bandwidth backplane," the planner said, referring to the Challenge machine, "but whether it works as well as they think it does remains to be seen."

SGI machines have been used at commercial sites for years. United Airlines in Elk Grove Village, Ill., has been using two SGI Iris machines to run flat-file databases since 1991. United downsized a crew-scheduling application from an IBM 3090 mainframe host to run on IBM RS/6000 and SGI workstations, users said.

SGI's Challenge

- **CPU:** 150-MHz, 64-bit MIPS R4400 RISC processor.
- **Operating system:** IRIX, a version of Unix System Version 4.
- **Power range:** 2 to 36 processors; up to 16G bytes of main memory and up to 3.5T bytes of data storage.
- **Price range:** $69,000 to $790,000.

Partners plan

SGI has already lined up several large integrators, including Electronic Data Systems Corp., Computer Sciences Corp. and SAIC, to take it into the commercial space.

Ross Bott, general manager of SGI's new Information Products Division, said systems integrators would provide better software and database support to users, leaving only hardware and technical support to SGI.

"These systems integrators see as as a neutral technology provider," said Ihab Abu-Hakima, the division's marketing director. "They know we're not going to go in and compete with them on consulting services." — *Jean S. Bozman*

Going for the record

One benchmark showed SGI's Challenge had 1,786 TPC-B transactions running the Oracle 7 database on a 28-CPU machine. In contrast, a high TPC-B benchmark for an Oracle 7 database running on an 8-CPU Sun server was 400.47. SGI intends to run more TPC benchmarks in 1994, the firm said, in an attempt to set new on-line transaction processor records.

Object orientation

Sun extends net management

By Lynda Radosevich

SunConnect last week unveiled a distributed, object-oriented network management platform, in addition to filling in strategy details and introducing enhancements to its existing SunNet Manager platform.

The Mountain View, Calif., division of Sun Microsystems, Inc. said it will take a three-tiered approach to network management.

At the high end, SunConnect will offer a product called Encompass that will be aimed at users who need a fully distributed enterprise network management platform. The low end will be a continuation of the current SunNet Manager line and a midrange strategy will include software that allows SunNet Manager's server to synchronize data.

SunConnect said it will ship Encompass, which is based on distributed, object-oriented technology licensed from NetLabs, Inc., to customers by the fourth quarter of next year [CW, Dec. 6]. A developer's release will ship in the second quarter. Encompass is based on a shared object-oriented data respository. It will enable application integration and security levels for multiple managers, according to SunConnect.

Help with integration

William Gray, a systems programmer at the Univerity of Tennessee, a SunNet Manager site in Knoxville, said he hopes the new release will help him integrate divided network management sections into a global view. "Currently, if we want to look at a particular section of the Novell network, we have to put up a monitor in that area," he said. Encompass will allow administrators to manage dispersed network functions from one screen and to call up that screen from various points on the network.

Intelligence added

Additionally, Encompass will include "nerve center" technology from NetLabs that can add some intelligence to network management. For example, the nerve center can be programmed to take action on specific alarms, according to Brian Biles, a SunNet product line manager.

One concern users may have is that existing applications written for SunNet Manager Versions 2.0 and 2.1 will not run on the Encompass platform. Instead, users will have to rewrite applications or use Version 2.2 as a bridge to send information from earlier releases to Encompass, Biles said.

Leader of the pack

SunNet Manager is the leading Unix-based network management platform, with 33% of the 1992 market share, according to International Data Corp. However, some analysts say IBM's NetView/6000, which only had 6% of the 1992 market, is picking up momentum because of IBM's close relationship with Digital Equipment Corp. and Microsoft Corp.

At the lower end, for managers of discrete network segments, SunConnect will ship in the first quarter of next year an updated version of SunNet Manager that runs on Intel Corp. 1486- and Pentium-based machines. Also, the management platform will be available for the Solaris 1 operating system — used by 50% of Solaris users, Biles said.

To link multiple SunNet Manager segments, SunConnect will also ship in the first quarter two platform extensions that provide a common repository and reporting mechanism for information sent by multiple SunNet Manager systems.

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[1] Ron Wirwe, "In Search of the Ultimate Notebook," *PC Computing*, July 1993. [2] Please call for details regarding AMBRA's money-back guarantee, limited warranty and Executive warranty. Return shipping and insurance charges are the responsibility of the customer. [3] Offerings may differ in Canada.

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Hubble trouble

Watching the Endeavor astronauts in space working on the Hubble telescope for about 30 hours last week made me wonder: Is there anything they *didn't* fix up there? I mean, did NASA launch a '78 Chevy by mistake and now they're trying to replace it piece by piece?

Actually, the Hubble experience may strike a familiar chord with many IS managers because what NASA is doing 350 miles above the Earth is coping with a bad legacy system. Imagine Hubble was instead an old accounting application. Launched years ago, the system is no longer able to accommodate its users' needs. The company's got too much invested in it to throw it out and there's no guarantee a replacement will work any better. So the owners just keep patching it up.

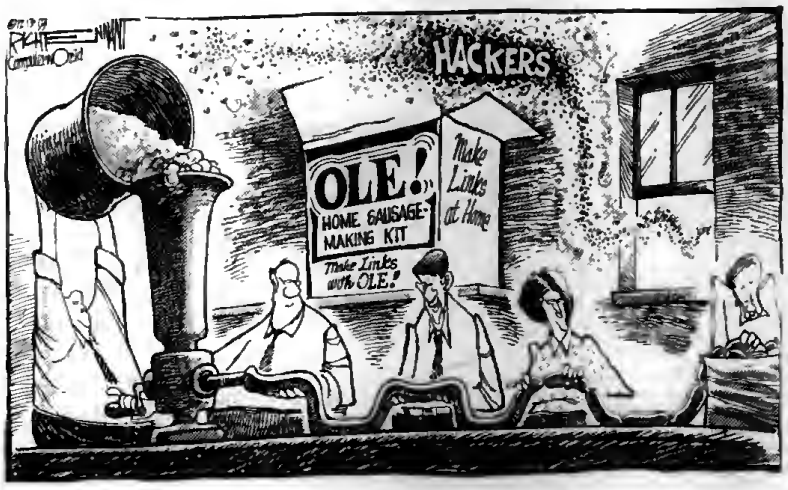
Chances are there's a system like that in your organization. IBM software restructuring guru Eric Bush says he's seen applications in some IS sites that are 90% constructed of 90% dead code. That's program logic that doesn't do anything other than take up memory space but is so poorly documented that everyone is scared to get rid of it.

Like it or not, the legacy is here to stay and the smart providers of software and services are going to be those who recognize that. "The future of computing is in applications that span platforms," wrote Humana's Joe Vincent in a defense of the mainframe that appeared in *Computerworld* last month.

Many vendors still don't understand that legacy systems will be one of those platforms. Remember application downsizing? A couple of years ago a lot of vendors were saying you should move mainframe applications down to client/server platforms. But just about no one could do it. Even if the applications worked on the network, performance suffered and user training and support problems overwhelmed the hardware savings. Now the buzzword is "rightsizing," which can mean whatever you want it to mean.

The technologies that get press are the ones that push the leading edge. But the ones that get the attention of IS management are those that leverage existing investment. A legacy systems is a lot more than an application. It's the skill sets of the programming staff, the technical experience of the network managers and the business knowledge of the whole organization. Any vendor that tells you that that stuff isn't important — that mainframes are dead, Cobol is a dinosaur and SNA is a has-been — is brain-dead. Some of the most successful software and service companies in the industry — Computer Associates, Legent, Electronic Data Systems, IBM, Computer Sciences and others — are those that understand how to leverage the resources users already have. There's a lot of value in those old systems, even if they don't work so well anymore. Just ask NASA.

Paul Gillin, *Editor*



Commodore Amiga overlooked, again

I must express concern over a glaring misstatement in your report on Michael Spindler's keynote speech at Comdex/Fall '93 ["Apple declares micro war," CW, Nov. 22].

Your report states, "Apple will be the only PC company with a machine that can run DOS, OS/2, Windows, Windows NT, Unix and Macintosh software." You owe it to your readers to point out that a suitably equipped Commodore Amiga already has the ability to run "... DOS, OS/2, Windows, Windows NT, Unix and Macintosh software" (not to mention AmigaDOS software). Why this has escaped the mainstream press for so long has been the subject of endless speculation and accusation.

The Amiga's 32-bit preemptive multitasking operating system, its object-oriented graphical user interface, its 1,280 by 1,128, 262,000-plus color screen mode, its 30 frames per second full-screen animation, its robust, interprocess communication, its Auto-Config hardware specification and other features are considered cutting-edge only now that the heavy hitters are targeting them.

All of this, combined with support for multiple (simultaneous) operating systems, should earn the Amiga at least an acknowledgement, if not full-scale coverage in the mainstream computer press.

Michael R. Hartigan
President
MCM Associates
Carol Stream, Ill.

The complexity of software contracts

In the article "Software contracts" [CW, Nov. 8], put simply, there is some bad advice.

It is suggested that "an adequate warranty is one that provides for a total refund at the customer's option...."

A computer user's damages for a system that fails to perform in accordance with specifications often can lead to that user's bankruptcy or, at the very least, damages far in excess of the price of the system.

Computer contracts involve complex legal issues. Your readers should be cautioned not to forget that.

Dennis S. Deutsch
Adjunct professor of computer law
Fordham University
Hackensack, N.J.

Regarding "Software contracts," the writers' suggestions are a typical knee-jerk reaction to a few common software contract provisions that software users will inevitably encounter.

Notwithstanding the boilerplate that is lumped into so many software contracts, there are no clauses or provisions that should be automatically inserted into any contract.

Each software contract uniquely defines a relationship between a vendor and a user, and that relationship must be the paramount element in any negotiation of contract terms.

If you build your contracts solely out of the boilerplate that will give you the best initial advantage in litigation, you will neglect the core purpose of the contract.

John A. Franczyk
Chicago

Waxing antithetical

Regarding your editorial, "Friends, Romans..." about John Sculley [CW, Oct. 25], why did you decide to use a word such as antithetical? It is not in my 1980 Oxford American Dictionary (paperback edition) and my spell checker just laughed.

I realize as a writer, you want to stretch your readers' minds, but I'll bet you lost most of them on that one.

Of course, it is easy to guess the meaning of the word from the context.

Dale Janus
Warren, Ohio

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Forget the old distinctions

Elisabeth Horwitt

You know how it is when the gods seem intent on hammering something into your thick head? This happened to me recently, and it seems I am far from alone.

It happened this way: I was at a client/server conference, and a guy from a major investment company was telling a horror story about what happened when a group of old-guard IS managers were turned loose on their first mission-critical client/server implementation.

Client/server demands not just new tools and new skills, but a different — more unified — view of the world.

The company had provided training to reorient the IS managers' mainframe skills to analogous PC-based products — DB2 to dBase II and so on. However, three months into the project, the group was already six months behind. Where they got stuck, my source said, was in trying to find the ideal combination of LAN, client, PC software and server products. The hardware and software people kept switching out products that didn't work, and they were getting into drawn-out debates with the database designers about which pieces of data would stay on the host and which would go on the LAN server.

The group finally figured out that they couldn't get away with the old data center organizational model, with separate cliques of database, network and hardware experts occasionally exchanging E-mail. Successful client/server implementations require a single project team of people who have at least a basic working knowledge of all disciplines, so the different disciplines can have meaningful dialogue, he said.

Right, I said. That makes sense.

A week later I got another tap from the hammer. An extremely savvy technical support manager told me that when he was just a network administrator, he assumed all he had to do was deliver network services to users' desktops and they'd start using them. He got a real awakening when he started working closely with users on the desktop. He learned that many found network services hard to use via DOS commands — and so were using them as little as possible.

Crossing that line between the network and the desktop gave this man some real insight into how to help users make the most of the company's client/server systems. His organization switched the user interface to the services from DOS to Windows, and users who had barely touched the network became enthusiasts.

The third hammer stroke is falling now — not just on me, but on this publication.

As our readers move more and more into client/server, we're beginning to realize we cannot afford to keep the old separations between reporters' beats.

A lot more cross-fertilization is taking place across reporters' areas of specialization — between the desktop operating system reporters and the networking people, for example. And we are all beginning to bone up on technologies that used to seem totally irrelevant to our jobs.

This is enabling us to better understand (and also sympathize with) what our right-sizing readers are going through. But boy, have we all got a lot to learn!

Horwitt is a *Computerworld* senior editor, networking.

Interactivity means 'active' participation

Esther Dyson

Go to any industry conference these days and you're sure to hear about interactivity and convergence — almost as if they were synonyms. But, to look at interactivity only in this context misses most of its value.

Convergence, of course, is the melding of television, publishing, telecommunications and computer firms (mostly through fierce financial battles). Interactivity, in that particular framework, is the ability to select from a wide array of merchandise displayed on one of 500 or so channels. You may even be able to get further information about a particular item by pushing a button on the remote that controls the set-top device — the seat of all that "interactivity."

But that's not what I'd call interactivity. That's filtering.

In my book, interactivity happens when there's genuine activity at *both* ends of the wire, fiber or radio link. As the rise of the Internet (a notoriously unfriendly, mostly text medium) shows, interactivity isn't about the medium; it's about communicating with other people — giving and getting attention and feedback from friends and colleagues, customers and suppliers. Computers are no longer a calculating device or a display device but a communication device.

For computer vendors, that raises the interesting question of how to enhance "interactivity." People want to remove the barriers to communication, not embellish them with complexity. Faster, simpler and cheaper is about it.

But there are things vendors can do. They can provide better access methods, as well as better ways of finding people and leaving messages. They can also develop better ways of compressing, organizing, presenting and sharing information created interactively.

For commercial computer customers, interactivity may apply not just internally but to interactions with their customers. That doesn't just mean multimedia videos and presentations, but interactive support where a customer can answer questions for himself (talking to an expert system or knowledge base and then getting on-line with a human expert as necessary).

If you think interactivity is all about home shopping, you're missing the most important implications.

Within an organization, employees need to work and learn individually, but they also need to work together and interact as a "learning" organization. Beyond the desktop, there's a group and a whole organization. Interactive communications means they can share information with each other.

The real win in interactivity won't be multimedia videos, on-line shopping or even the ability to obtain information on demand but tools that let people create their own forms of communication. Just as the 1-2-3 spreadsheet replaced financial planning languages used by experts and let a whole new generation of people create their own business plans and models (for better or worse), interactivity could give people the means by which they can develop communications, such as videos and voice-overs for a shared document, to suit their own purposes.

Suppliers can add value, but customers want a role in the process, too, and need easy-to-use tools to let users edit voice and video and use existing information management tools in new and different ways for real-time give and take.

Then, more than anything, true exploitation of interactivity is up to the users, not to the suppliers. Above all, interactivity requires user participation. No more desk potatoes!

Dyson is editor of "Release 1.0" and "Rel-East," newsletters on new technology and new computer markets in Eastern Europe.

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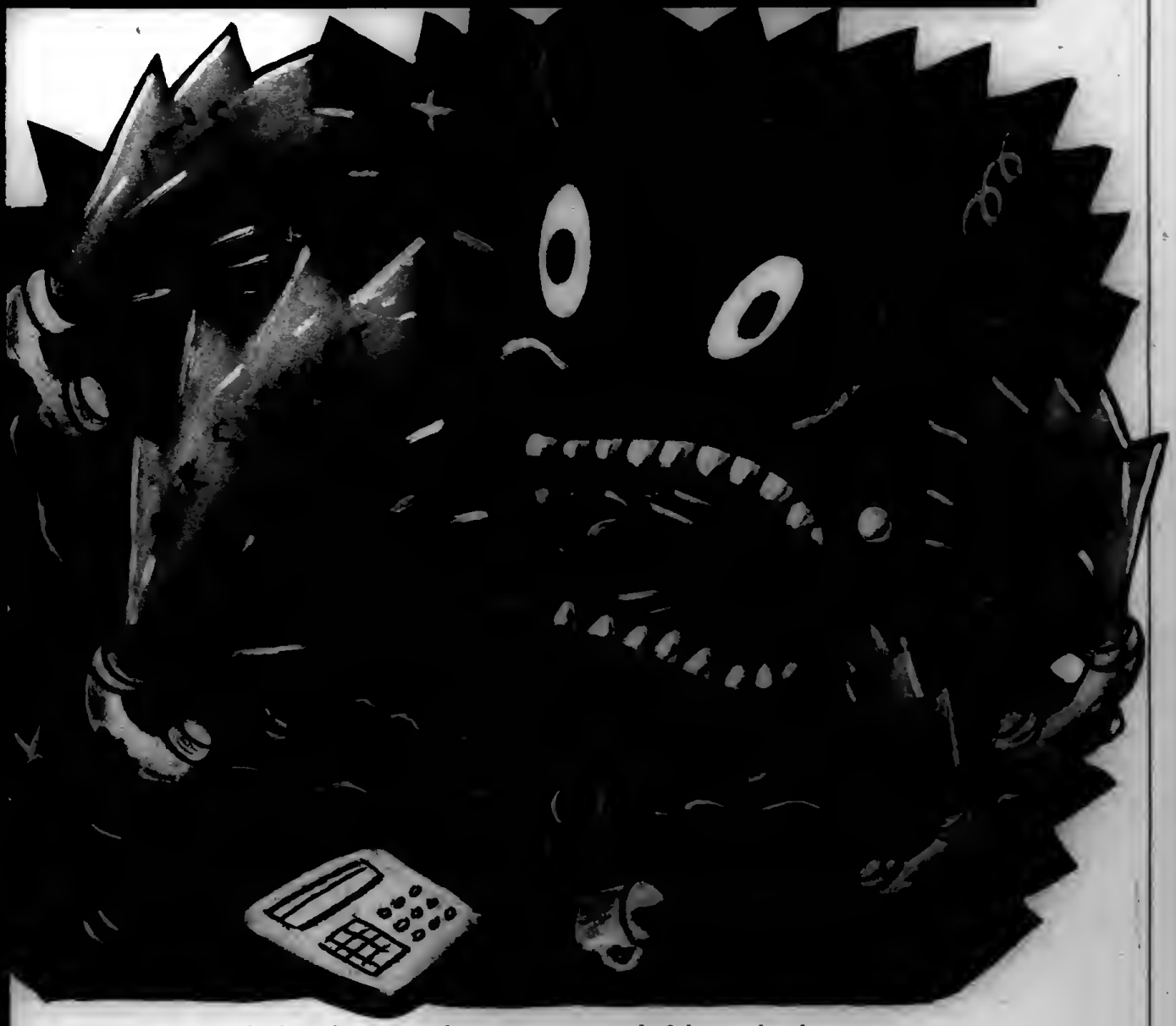

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Microsoft to offer FoxPro for Macintosh

By James Daly

Microsoft Corp. is likely to make a splash at next month's Macworld Exposition in San Francisco when it delivers its first database for the Apple Computer, Inc. Macintosh.

FoxPro 2.5 for the Macintosh, which will be announced this week, not only fills a hole in Microsoft's Macintosh product line, but its $99 introductory price is expected to set off a pricing donnybrook among established competing products, such as Claris Corp.'s FileMaker Pro and Acius, Inc.'s 4th Dimension, both of which sell for hundreds of dollars more.

Microsoft will also emphasize FoxPro 2.5's cross-platform compatibility, which offers support for both Windows and DOS. In addition, FoxPro for The Santa Cruz Operation's Unix and Xenix will be available by June, Microsoft officials said.

One standard

FoxPro for Macintosh-based applications can be run, unchanged, in FoxPro for Windows, FoxPro for DOS, and Unix and Xenix, said product manager Bob Fortner. Likewise, FoxPro for Windows and DOS applications can be run without modification in FoxPro for Macintosh.

For developers, this means building an application once and running it on four platforms. For corporations, it means supporting only one database management system standard. Support, training and maintenance can be consolidated into one product for users of all levels on multiple operating systems, Fortner said.

That simplicity of support is hitting a nerve with users. "It provides an extra measure of choice in painlessly migrating an application, and that's very important to us," said beta user Mike Silberger, an associate at J. P. Morgan & Co. Financial Services in New York, who has been running a beta copy of the application for three months.

Standing alone

Microsoft will also offer a professional edition of FoxPro for Macintosh that allows developers to distribute stand-alone applications royalty-free and write libraries in C or C++ that can be called from FoxPro. The Professional Editor is scheduled to be upgraded to allow development of client/server applications via Open Database Connectivity in the first quarter.

The professional edition will also provide a comprehensive set of tools for developers and power users to create applications that take advantage of the Macintosh-style user interface. The application's screen builder, for instance, supports more than 16 different screen objects such as buttons, picture controls, check boxes, pop-up lists and radio buttons.

Microsoft FoxPro 2.5 will be available for the introductory price of $99 through June. Then it will jump to $495, Microsoft officials said.

Object technology: Ready to fly?

Long-term promise in PC applications tempered by current IS realities

By Michael Vizard

For months now, PC developers have enticed users with the promise of applications that will include object technology to simplify data integration across applications.

But achieving the promised benefits of object-oriented technology in the corporate world is going to require users to do a lot more than simply wait for the next major upgrade of their favorite off-the-shelf software package. In fact, information systems managers can expect to reevaluate just about every piece of software they have as they move, in phases, to the next generation of object-oriented applications.

"Objects will provide important incremental benefits. But people already have a lot of applications written in different tools, so they are going to have to see what the actual business benefits will be when they move to a universal object-oriented development model," said Brent Williams, an industry analyst at International Data Corp.

"Most people will probably look to embellish their existing applications before moving completely to an object environment," said Tim Harmon, an industry analyst at Meta Group, Inc.

OLE vs. the rest

Driving the move toward object technology on the desktop and the industry at large is Microsoft Corp.'s decision to add object-oriented technology to Windows using its Object Linking and Embedding (OLE) 2.0 interface. Meanwhile, IBM, Apple Computer, Inc. and several other vendors are pursuing the rival OpenDoc standard, which purports to provide similar capabilities on other operating systems.

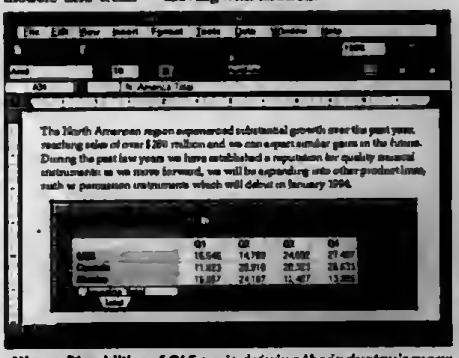
But OLE and OpenDoc are more than just another set of programming interfaces. OLE 2.0, for example, actually consists of more than 400 object-oriented interfaces that make up the first step in Microsoft's drive to turn its desktop operating system into a truly object-oriented environment.

IS managers are looking at adopting new programming models and training users on how to take advantage of highly integrated applications. They also must provide support in a world where the source of a particular glitch in one user's file may actually be in an application that was originally created on another user's system. Once these object standards are deployed, IS managers will find themselves confronting a host of object interoperability issues that vendors are just beginning to address [CW, Dec. 6].

"OLE 2.0 is the beginning of object desktops. IS is going to have to look at OLE as a new class of applications that has to be considered as part of a long-term object strategy. Overlaying OLE 2.0 on top of existing applications isn't going to provide a lot of benefits," said David Coursey, editor of the "P.C. Letter" newsletter.

However, because OLE 2.0 represents such a massive undertaking, a preponderance of the IS community is only now beginning to experiment with the limited number of applications that support OLE 2.0.

Even Nordstrom, Inc., a leading-edge user of Microsoft technology, is moving with caution.



Microsoft's addition of OLE 2.0 *is driving the industry's move toward object technology*

"We've done some limited beta testing of OLE 2.0 with Excel 5.0 and Word 6.0. But we don't have any immediate plans to make use of OLE 2.0 until early to middle of next year," said Pete Claar, a developer at the Seattle retailer.

Taking their time

Other shops will be slower still to tackle OLE 2.0.

"We won't move to it anytime in the near future and probably won't begin to evaluate initial OLE 2.0 applications until late 1994," said Gary Falk, a PC application specialist at Nixon, Hargrave, Devans and Doyle, a law firm in Rochester, N.Y., with more than 700 PCs.

"OLE 2.0 is like getting a Lego set. But it's going to require a complete retraining of users, and they are resistant to change. And there will be so many things that probably won't work that I don't see it providing anything other than headaches," he added.

A large part of this protracted rollout of OLE 2.0 applications is due to the fact that for OLE 2.0 to be truly effective, most of the applications in the or-

Object technology, page 42

Interface intricacies

Technologies such as OLE promise to ease the exchange of data across applications by encapsulating data into objects that can be more easily manipulated by other applications across live links.

That is because the applications only have to be aware of the interface, known as the "handle," that surrounds the data they are looking to access.

In a PC application, OLE 2.0 technology will translate into support for a true drag-and-drop protocol that allows users to exchange data across applications simply by dragging an icon that represents that data across the screen and clicking on another application.

In addition, users will be able to launch an application, such as electronic mail or a spreadsheet, from within a word processor and actually edit data in that spreadsheet using the standard commands associated with that application. This latter capability is referred to as in-place editing.

Beyond that, IS shops will benefit from being able to address common interfaces in the same application with a common macro language. Using this capability, developers can create macros for multiple applications or write applications that incorporate off-the-shelf spreadsheets or word processors in their custom applications. — *Michael Vizard*

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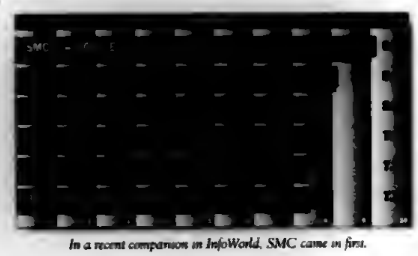

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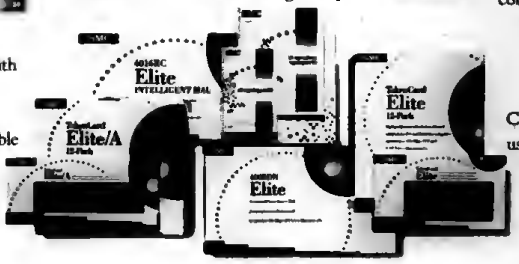

In fact, according to independent network testing laboratory LANQuest Labs, EZStart is "head and shoulders above the others."

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'Bars' smooth data access

By Michael Vizard

Looking to give users an easy-to-use tool for analyzing data drawn from databases, Computer Concepts, Inc. in Bohemia, N.Y., has released a proprietary database that presents users with a bar chart metaphor.

Called D.B. Express 1.0 for Windows, the database uses dual indexing algorithms to sort through data that has been downloaded from SQL or PC databases. One indexing algorithm keeps track of data stored in D.B. Express, while the second links that data to the appropriate bar chart display.

Attracted by D.B. Express' ability to give end users a tool for quickly doing drill-down analysis of data, Mellon Financial Services in Ridgefield Park, N.J., adopted the product as a component of its Executive Inquiry System.

At Mellon Financial, data from a flat-file system running on an IBM mainframe is downloaded into a Clipper database from Computer Associates International, Inc.; that is then transferred to users running D.B. Express.

"We spent some time up front to set up the interfaces that link D.B. Express and the databases," said Vincent Scilla, Mellon senior vice president of information technology.

Using standard Windows mouse commands, users can navigate through D.B. Express to create bar chart representations of queries. Scilla said he envisions users employing D.B. Express as part of their interactive presentations.

"Whenever you go into a presentation with presorted data, somebody always has a question. Now you'll be able to answer that question by running a query against D.B. Express at the presentation," Scilla said.

Pricing for D.B. Express is $595.

Desktop enhancements

AST adds multimedia to Premmia, Bravo

By Michael Fitzgerald

AST Research, Inc. last week became the latest major PC vendor to add multimedia capabilities to its business-focused PCs, building CD-ROM drives, sound and full-motion video support into its Premmia and Bravo desktop lines.

AST already has such features in its consumer line, where accoutrements such as CD-ROM drives are becoming checklist items. AST joins other PC bigwigs such as IBM PC Co. and Compaq Computer Corp. in adding at least some multimedia features to its business-oriented PC lines.

AST has limited the features to two models: a Premmia with a 33-MHz/66-MHz DX2 chip and a 340M-byte hard drive starting at $3,449, and a $1,627 Bravo LC with a 33-MHz 486SX and a 170M-byte hard drive. AST will bundle Macromedia, Inc.'s Presentation Pak, multimedia clip art and Microsoft Corp.'s Runtime Video for Windows on the Premmia. It will add Microsoft Publisher and Kodak Corp.'s Photo CD Access and Photo Sampler to the Bravo.

Watch your step

AST's cautious step into business-oriented multimedia reflects the market, analysts said.

"It's a big thing in consumer channels but hasn't been prevalent in the business channel," said Richard Zwetchkenbaum, an analyst at International Data Corp. in Framingham, Mass.

Zwetchkenbaum said a variety of factors, including digital signal processors, new 16-bit audio boards and Pentium chips, were beginning to spark an interest in the high-bandwidth applications.

While large corporations such as SmithKline Beecham, Inc. and Caterpillar, Inc. have embraced multimedia, many other companies continue to study how to apply the new technologies.

"At this moment it's a little bit premature for us," said Victor Mutnick, corporate vice president at New York Life Insurance Co. Mutnick said New York Life is examining ways to use multimedia and sees it as potentially useful for training and sales.

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Language key for communication

One of the most enticing benefits of object technology for IS managers will be the ability to use a common macro language across multiple applications since they will all, in theory, support the same OLE 2.0 interfaces.

"Having a common macro language is extremely important. I take the covers off a lot of applications. It will be nice to have one language that I can use to build links and interfaces between the applications," said K. C. Madden, a business decision-support consultant at Kraft General Foods International in Rye Brook, N.Y.

closer look OLE

In fact, Tim Harmon, an analyst at Meta Group, suggested that the arrival of object technology and common macro languages will radically alter how IS staffs approach application development.

"What you'll have is a core development team that will represent about 15% of your staff, and the rest of the staff will do system integration and component assembly. And a lot of that work will be done in individual departments," Harmon said.

Things to come

Once these technologies are implemented, they promise to greatly simplify the use of software packages that are currently discrete entities unto themselves.

"I do a lot of cutting and pasting. The thought of simply double clicking to open another application is desirable, especially when using a presentation package and you need to open the original parent application to access a file," Madden said.

But in a trade-off to keep these environments manageable, IS managers will probably have to base their approved purchase lists around products that are compatible with the OLE 2.0 implementations employed in the suites from the major PC application software vendors.

As a result, applications from other vendors will essentially become "applets" that plug into a specific suite.

"This will be the path of least resistance for most customers, and the major PC software vendors are certainly counting on it," said Krystyna Fliistowicz, an analyst at Dataquest.

— Michael Vizard

Object technology

CONTINUED FROM PAGE 37

ganization have to support it. Most vendors will not comply with OLE 2.0 until sometime next year, and custom applications built by IS shops probably will not support OLE 2.0 until late next year or early 1995.

In fact, Microsoft has yet to ship a complete OLE 2.0 developer's kit to IS shops, and most developers will hold off major projects until higher-level development tools, such as class libraries and object-oriented programming languages, add support for OLE 2.0.

Waiting on Microsoft

Tools providers say they will not proceed until they see how Microsoft has implemented OLE 2.0 in its Microsoft Office 4.0 suite, which is scheduled to be completed early next year.

"OLE has a reputation for being hard to write for, so a lot of people are going to wait to do anything until the higher-level tools come out," Williams said.

"The OLE 2.0 development kit has not been widely circulated yet in a shrink-wrap form. Most people are working from prerelease kits and are itching to get ahold of it," said Roy Wetterstrom, managing partner at Micro Modeling Associates, Inc., a developer in New York.

But even when developers get the kits, they will find the tools for tracking individual objects in an application are not that robust.

"OLE is not that easy to work with right now, and there's nothing available yet to help you keep track of what's linked to what. I suspect, though, that once you link OLE applications, it will become easier. And the benefits will outweigh the complications," said Krystyna Filistowicz, an industry analyst at Dataquest, Inc. in San Jose, Calif.

> "OLE has a reputation for being hard to write for so a lot of people are going to wait to do anything until the higher-level tools come out."
> — Brent Williams, International Data Corp

In the meantime, IS shops will spend the next several months boning up on OLE 2.0. "It's definitely real significant technology that will allow us to build more intelligent applications and robust solutions. As a developer, the benefits will outweigh any of the costs," Claar said.

"People really like the idea of being able to take a module and use it in multiple applications," Wetterstrom added.

In fact, OLE 2.0 represents an advance over existing data integration technologies such as Dynamic Data Exchange (DDE) protocols, which accomplish many of the same tasks. OLE 2.0 is expected to provide a more structured environment for linking applications.

"The problem with DDE is that there is no documentation from anybody on how they used it," Claar said.

Obex the right Rx?

Microsoft's rivals say that while they intend to support OLE 2.0 in future iterations of their software, many of the benefits of object technology can be had in the short term without causing a major upheaval throughout the organization.

To this end, Lotus Development Corp. promotes the object store capability of its Notes database, which provides a mechanism for linking related documents in a database. And Borland International, Inc. has recently begun delivering its Object Exchange (Obex) facility, which provides a relatively thin layer of object technology that can be used to encapsulate data so that it can be exchanged directly with another Obex-compliant application across either electronic mail or network protocols.

But Obex is only a short-term solution that wraps object interfaces around existing DDE protocols and E-mail to give users some of the capabilities of OLE 2.0, said Ezra Davidson, manager of IS at the Brown Organizations, a Los Angeles-based conglomerate that manages radio stations.

"I'll give Obex to my users, but I'm not going to build a corporate-wide strategy around it. I'll wait for OLE 2.0 to do that because it will give me the live links and a common macro language across multiple applications," he said.

— *Michael Fiscorb*

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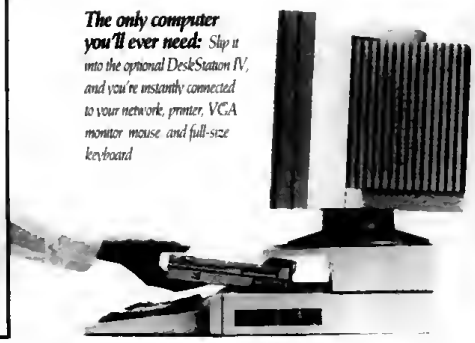

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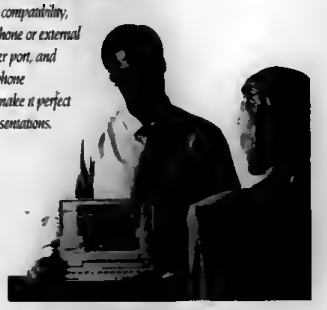

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Jeffrey Henning

Who's the PDA king?

Microsoft could do it again. Apple commercialized the GUI, but Microsoft popularized it and profited the most from it. Apple has just commercialized the personal digital assistant (PDA), but Microsoft has a good chance of popularizing it and profiting the most from it.

The secret to Microsoft's chance for success is that it understands the customer's near-term need for handheld computers better than Apple does.

When describing the Newton, Apple waxes eloquent about a personal assistant's helping people manage their public and private lives; about giving them access to libraries of digital information and helping them easily communicate with others.

It is a compelling vision, but Apple is espousing a vision of a new industry, and new industries take time to build. Software has to be written. Digital information has to be created, and communications hardware and services have to become less expensive.

Microsoft, for its part, is discussing a new market within the existing industry. Microsoft has partnered with Compaq, Intel and VLSI to develop its vision of handheld computing, which it calls the "mobile companion."

The premise of the mobile companion is simple: Users have PCs on their desks but go without computing power when they are away from their desks. In fact, a survey of 1,500 mobile professionals revealed that 58% had PCs at their desks, but only 10% had portable computers when they were away from their desks.

That same survey showed that 70% of the time mobile professionals are away from their desks, they are on-site. For such situations, notebook PCs are too heavy to lug around and too expensive to justify. ("You want me to buy you a PC for when you're in the office but away from your desk?!") Mobile companions, on the other hand, will be half the cost and one quarter the weight of notebooks.

Preaching to the converted

Apple has talked about using PDAs to access digital information, such as travel guides, reference works and electronic books. But there is an insufficient store of digital information to motivate users to purchase PDAs. Moreover, the most important digital information is the information that users create on their PCs. Such information has more value to them than any Fodor's city guide, which, after all, can be picked up for $20 in book form, giving you 80% of the functionality of Fodor's software.

Where Apple plans to create handheld computers for "the rest of us," Microsoft plans to create handheld computers for people who are already computer users. Not only does Microsoft have a target audience more likely to spend money on computers, it also has a target audience willing to put up with conventional technology.

Apple's Newton Intelligence operating system is widely considered to be the most advanced PDA technology planned — but for its market, it has to be.

Same tricks

Microsoft's PDA-like operating system, At Work for Handhelds, is not expected to be particularly innovative, being a subset of Windows with an API that's 80% compatible. This means that At Work for Handhelds reuses past Windows technology rather than pioneering new technology. This makes it easier for independent software vendors — already fluent in the arcane Windows API calls — to develop At Work for Handhelds software.

At Work will feature none of the sophisticated interface capabilities of Newton Intelligence since its prospective users are already comfortable with computers and don't need an easier-to-use interface. Microsoft does not need superior technology to succeed.

Apple's long shot

All is not lost for Apple. Many of the advantages of the mobile companion will be in terms of software designed for PC data access.

If Apple prods its Newton developers to build applications that provide PC data access, the Newton may turn out to be better suited to meet customers' needs for accessing PC data.

Apple's biggest challenge, however, may be in marketing to the installed base of PC users. It's a Windows world, and Windows customers are, for the most part, satisfied with Microsoft. Moreover, these customers view Apple with some suspicion because of its aggressive rivalry with Microsoft.

Unless Apple takes strong action soon to make the Newton more suitable for PC users, it may find itself once again blazing the trail that Microsoft develops into a superhighway.

Henning is a senior industry analyst at BIS Strategic Decisions in Norwell, Mass.

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Software

Baarns Consulting Group, Inc. has announced The Baarns Utilities 5.0, a utilities program designed for Microsoft Corp.'s Excel 4.0 and Excel 5.0.

According to the Sylmar, Calif., company, the product was designed to work with the Excel 5.0 menu structure, plus it offers an autodialer and 23 enhanced utilities.

The utilities include Baarns AutoDial, Baarns AutoSave, Baarns Delete, Baarns Paste Date/Time, Baarns Reminders, Baarns Startup and the Baarns Template Wizard.

A single-user version of The Baarns Utilities costs $89.95.

▶ *Baarns Consulting Group*
(818) 364-6148

Future Labs, Inc. has announced TalkShow Version 2.0, desktop document conferencing software for Windows.

According to the Cupertino, Calif., company, the product can be used for corporate desktop conferencing over wide-area networks because it supports NetBIOS for LANs, TCP/IP and IPX.

Features include multipoint conferencing over modems, a zoom feature, a phone directory, a colored highlighter, a whiteboard pointer and a document presentation tray.

TalkShow 2.0 costs $199 per single-user license.

▶ *Future Labs*
(408) 973-7228

Vermont Creative Software has introduced Vermont HighTest, a software testing tool.

According to the Richford, Vt., company, HighTest was designed for users who produce software for Windows applications. The product records "test scripts" as the user runs a program.

Screen images, keystrokes, mouse events and the internal details of window controls are recorded.

HighTest's interactive Suite Manager joins the test scripts, forming test suites.

Without programming, the Suite Manager creates script hierarchies and sets up loops for multiple script execution.

Vermont HighTest costs $495.

▶ *Vermont Creative Software*
(802) 848-7731

Clinical Research Systems, Inc. has announced Clinical Research System for Windows (CRSWIN), a PC software product for management and analysis of clinical trial and patient data.

According to the Minneapolis company, CRSWIN was created for users interested in collecting, analyzing and managing clinical information, including medical device manufacturers, pharmaceutical manufacturers, universities, hospitals and clinical trial management organizations.

CRSWIN features built-in word processing and can study management functions such as monitoring, reporting, analysis, data entry and data validation.

CRSWIN was designed to run as a single-user or network system in the Windows environment.

Single-user pricing starts at $7,500.

▶ *Clinical Research Systems*
(612) 835-4018

North Coast Software, Inc. has announced Conversion Artist 2.0, an image conversion application for Windows.

According to the Barrington, N.H., company, Conversion Artist 2.0 includes an assortment of imaging and prepress features such as color correction, style filters and image editing.

Screen capture, batch conversion of multiple images and 35 popular image formats and format variants are also included.

Conversion Artist 2.0 costs $149.95.

▶ *North Coast Software*
(603) 664-6000

Asymetrix Corp. has announced an upgraded version of Asymetrix MediaBlitz, a multimedia utility for Windows.

According to the Bellevue, Wash., company, the product allows all levels of Windows-based users to add multimedia to their applications.

Users can combine and synchronize sound, video, graphics and animation to produce a multimedia score. The scores can be used alone or in applications that support Object Linking and Embedding.

The upgrade also features media editing tools, extended graphics capabilities and text support, transition effects and portability capabilities.

MediaBlitz 3.0 costs $95.

▶ *Asymetrix*
(206) 637-1600

Hardware

Micro Express has introduced the NB8266, an active-matrix color notebook.

According to the Santa Ana, Calif., company, the notebook includes 4M bytes of memory, expandable to 20M bytes, a 200M-byte hard disk, 3.5-in. floppy disk drive, color LCD display and a built-in trackball mouse.

The notebook includes a PCMCIA expansion slot and intelligent power management to maximize battery life.

The NB8266 costs $4,499.

▶ *Micro Express*
(714) 852-1400

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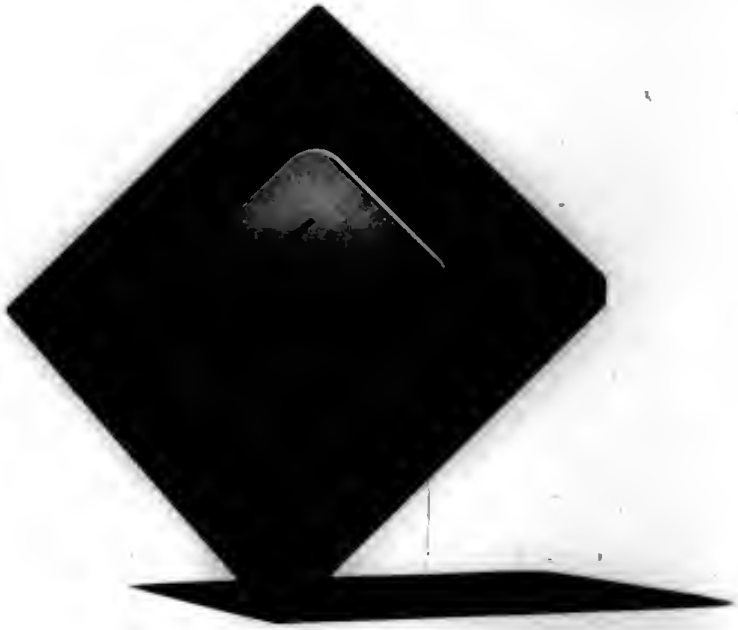

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The reason Microsoft chose the MIPS RISC architecture is simple—raw, unadulterated speed. In fact, NEC's V_R4400 runs Windows NT almost twice as fast as Pentium,™ and nearly four times as fast as the 486™ DX2/66.*

So before you buy a computer to run Windows NT, think about what's inside. After all, it only makes sense to choose the quickest processor that processed the program.

If you're responsible for evaluating new PCs running Windows NT, look for the new V_R4400-based systems. They run faster, save you money and even let you use your existing DOS and Windows 3.1 applications.

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NEC

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Backup industry to become more open

By Stephen P. Klett Jr.

The backup market has lagged the computer industry as a whole in embracing standards. However, recent announcements by Palindrome Corp. and Mountain Network Solutions, Inc. indicate that storage vendors are beginning to change their proprietary attitudes.

The two companies have started shipping backup software for Novell, Inc.'s NetWare environment that they claim is 100% compliant with Novell's Storage Management Services (SMS). SMS is a standard set of application programming interfaces designed to aid reliable backup and storage management application development in a heterogeneous environment.

What full SMS-compliance means for users is that they no longer have to upgrade their backup software when a new version of NetWare is released. In addition, they are no longer locked into one vendor for client support, and they can interchange tape, other media and files among different backup software packages.

"SMS compliance is important because if a change is made to NetWare, you don't want to have to update your backup software and change all your agents as well," said Michael Kaunitz, network administrator at St. Paul Reinsurance Management Corp. in New York.

Both Palindrome's Network Archivist SMS 3.0 and Mountain Network's FileSafe for Windows Rescue NLM support all three main components of the SMS architecture (see story at right).

SMS compliance

Most NetWare backup software supports the first two levels of Novell's SMS standard

Vendor	Product	SMS support	Price
Conner Storage Systems	Backup Exec for NetWare 4.0	Storage Management Engine (SME) Target Service Agents (TSA)	
Legato Systems, Inc.	NetWorker 2.2 for NetWare	SME, TSA	
Mountain Network Solutions, Inc.	FileSafe for Windows Rescue NLM	SME, TSA System Independent Data Format (SIDF)	
Cheyenne Software, Inc.	ArcServe 5.01 for NetWare Windows Edition	SME,TSA	
Palindrome Corp.	Network Archivist SMS 3.0	SME, TSA SIDF	

While many vendors have come out with products boasting SMS compatibility, most have complied with only one or two SMS levels, analysts said. Santa Clara, Calif.-based Mountain Network and Scotts Valley, Calif.-based Palindrome are the first to support all three, they said.

While Kaunitz, who uses Legato Systems, Inc.'s Networker 2.2, agreed that the first two compliance levels were essential, he questioned the practicality of System Independent Data Format (SIDF), the third level, which ensures interchangeability among storage media.

Legato, in Palo Alto, Calif., was one of the first companies with SMS-compliant backup and recovery software when it released Networker for NetWare in April last year. However, Legato is pushing its own standard tape format called Open Tape Format, which more than 30 vendors support, including IBM, Sun Microsystems, Inc. and Silicon Graphics, Inc.

With Open Tape Format, Legato is aiming Networker at users who want enterprisewide storage management from any point on the network. "SIDF is NetWare-centric while [Open Tape Format] is network-centric," said Edward Cooper, vice president of marketing at Legato. "We don't care what server you use for backup."

Kaunitz said Legato's cross-platform approach makes more sense than SIDF, especially for users mov-

Backup industry, *page 51*

The building blocks

Both Palindrome's Network Archivist SMS 3.0 and Mountain Network's FileSafe for Windows Rescue NLM support each of the following three main components that make up the SMS architecture:

- Storage Management Engine (SME): Communicates with network clients through a common interface that ensures the ability to support new platforms and versions of NetWare without requiring a change.
- Target Service Agents (TSA): Software modules that identify and isolate the operating systems of the various nodes on the network and prepare them for backup/restoration to the NetWare server.
- SIDF: Defines a standard format for storing data on storage media and provides tape interchangeability within the Novell environment. It evolved from a consortium of more than 20 vendors, including Compaq Computer Corp. and Digital Equipment Corp.

Notes, Microsoft apps linked

Software packages promise expanded groupware capabilities

By Michael Vizard

Corporate Software, Inc. in Canton, Mass., is out to create a business on top of the schism over groupware between Microsoft Corp. and Lotus Development Corp.

At Lotusphere '93 in Lake Buena Vista, Fla., last week, Corporate Software announced that it has begun beta-testing two utilities that will allow Notes users to access information in Microsoft Project for Windows project management software and Microsoft Schedule+ group scheduling software.

Meanwhile, Cambridge Publishing Group, Inc. in Columbus, Ohio, last week said it will ship a similar Notes-to-Project package, Project Link, on Jan. 1, at a price of $99.

Corporate Software's utilities are built on top of the Mail Express Gateway, which links Microsoft Mail to Lotus' Notes. Corporate Software announced the gateway earlier this year.

Looking for the link

"Project management software is an ideal workgroup application for Notes," said John Casey, director of CSI Technologies, the Corporate Software unit charged with developing new applications.

CSI Technologies' primary focus will be to build tools that link Notes with various applications from Microsoft.

Earlier this year, Microsoft, along with WordPerfect Corp. and Borland International, Inc., announced its intention to add Notes support to its applications. Since then, however, Microsoft has not outlined any specific plans for Notes.

"We don't want to build any products that Microsoft intends to build themselves, so we are negotiating with them to see what they want to build vs. what we can build," Casey said.

Users looking for better way

Meanwhile, users report they are looking for ways to better integrate Microsoft applications with Notes.

Paul Pritchard, manager of end-user computing at Compucom Systems, Inc., a PC reseller and Windows shop in Dallas, said it appears that Microsoft's intention to support Notes is just a feint to hold the market in place while it works on its own workgroup strategy for Windows and Windows NT.

As a result, Pritchard said his company will move ahead with Notes and look to third-party vendors for tools to integrate Notes and Microsoft applications.

Pricing for the latest Corporate Software utilities, scheduled to be available in the first quarter, has yet to be determined.

SQL Access seeks user input through board

By Kim S. Nash

The SQL Access Group has named an advisory board of five industry analysts in an effort to inject more user opinion into standards proposals for getting packaged and user-built applications to talk more smoothly to relational databases.

The group also plans to build more uniform relational database communications blueprints to let users more easily swap databases and query and development tools.

"Our push is to make all tools work with all databases," said Merrill Holt, vice chairman. Holt is also a principal product manager at Oracle Corp.

However, because archrivals such as Oracle and Sybase, Inc. belong to SQL Access Group, cross-product query languages and other interfaces are likely to be slow in coming, Holt acknowledged.

Ultimately, however, competing companies will see the wisdom in cooperating because working together could propel database sales, he said.

"If the overall database market grows because we can deliver interoperability, then this is good for all vendors," he explained.

Because hardware and software makers account for 34 of the group's 39 members, SQL Access Group has been criti-

SQL Access, *page 50*

SQL Access

CONTINUED FROM PAGE 49

cized for not representing user views. Membership fees and the substantial investment of time required to participate have kept some users out, according to John Deutsch, chairman. To join, users, or specification reviewers, must pay a onetime fee of $2,500, plus $5,000 annually. To actually help build specifications, the annual fee is $10,000.

SQL Access had relied primarily on a close relationship with the vendor/user consortium X/Open Co. for user feedback, said Deutsch, who is also technical director at Information Builders, Inc. An unpaid advisory board, which will more closely reflect user views, is scheduled to meet twice a year, with its next confab slated for June 1994. The first meeting was in November.

Elsewhere, the 4-year-old group announced that its call level interface (CLI) specification has advanced from a primitive "snapshot" guideline to the next stage of maturity, dubbed a "preliminary specification."

The SQL Access CLI defines interaction between third-generation languages such as C or Cobol and SQL, which is used to talk to relational databases. Microsoft Corp., Fulcrum Technologies and other software firms had built CLI into products such as Open Database Connectivity gateways when CLI was still in snapshot stages.

Data access

Business Objects enhances database query facility

By Michael Vizard

Business Objects, Inc. in Cupertino, Calif., this week will release Version 3.0 of Business Objects, which adds a CASE Access utility that automatically maps Business Objects to a data dictionary running on a SQL database.

In addition, the release adds support for a companion product that lets users perform multidimensional analysis on data stored in Business Objects, a report writer and the ability to access SQL databases via Microsoft Corp.'s Open Database Connectivity interface.

According to Business Objects executives, the ability to automatically map the software — which was designed to allow end users to query databases without knowing any SQL commands — was required to make it easier to configure systems for end users.

But information systems departments may still prefer to map Business Objects to SQL databases manually because most SQL databases were not created with the goal of giving end users the ability to do queries.

"Most of the names used in a database are not all that user-friendly, so you may not want to adopt those names. We find it more effective to work with users to create names for the object they want to work with and then map them to the SQL database. Most of the names in the SQL database tables were created with application developers in mind," said Brian Cheney, PC project leader at Nintendo America, Inc. in Bellevue, Wash.

> Nintendo chose the tool because it gives users access to data but retains some IS control

Giving users access to data

Cheney said Nintendo adopted Business Objects because it was looking for a tool that could give users access to data, while keeping a modicum of control in the hands of IS. In contrast, PC applications that have SQL interfaces are not linked into any database management services.

"We wanted to protect ourselves from runaway queries," Cheney said. In addition, he noted that since Business Objects is used primarily as a read-only querying tool, IS managers do not have to worry about users tampering with the integrity of a database through updates.

CASE Access will initially support computer-aided software engineering (CASE) data dictionaries from Oracle Corp. Drivers for products from other CASE vendors will be available in 1994.

Pricing for Business Objects, which runs on Windows, Macintosh and Unix platforms, is priced at $595 per user. The database administrator module is priced at $3,495. Business Analyzer is priced at $250.

Backup industry

CONTINUED FROM PAGE 49

ing to client/server environments.

While analysts said the appearance of compliant products was a good sign for SMS' viability as a standard, they said a good deal of confusion still surrounds full SMS compliance.

"There's a lot of finger-pointing going on right now among all the vendors, which makes it hard to tell how much of this SMS hype is a marketing ploy," said Stan Corker, an analyst at International Data Corp. in San Diego. However, Corker said Palindrome and Mountain Network's added SMS capabilities probably make up for some of the weaknesses of proprietary backup software.

Changing their proprietary nature is becoming a necessity because of customer preoccupation with open systems, which may result in a better quality product, said Nick Blozan, product manager for SMS at Mountain Network.

Network Archivist SMS 3.0 integrates backup, automatic archiving and hierarchical storage management. FileSafe for Windows offers traditional backup/restore functions plus automated disaster recovery features. Both are available now as NetWare Loadable Modules and cost $1,695 and $495, respectively.

Forms Engine takes off in federal agencies

By Gary H. Anthes
WASHINGTON

Surely no organization has more forms, or more forms users, than the federal government. That may explain why a PC-based software package that helps users design, fill out, transmit, print and store forms is moving into high gear here.

Called Forms Engine, the product was developed for the U.S. Army by Computing Devices International, a unit of Ceridian Corp. in Falls Church, Va. Under the agreement with the Army, Forms Engine is available free to any federal agency, and it has found uses so far in the White House, NASA, the departments of Agriculture, Commerce, State and Veterans Affairs and a few other places.

There are some 250,000 users in the government, and there is a Forms Engine Users Forum, according to one user.

Changes live

Veterans Affairs has given Forms Engine to about 300 of its employees, according to Mike Berger, director of records management.

"One fellow E-mailed me the first time he used it and said, 'Forms Engine has changed my life. I never knew how much I hated [manual] forms until the first time I did it automated,'" Berger said.

Veterans Affairs, like all agencies, abounds with multipart paper forms. For example, the old travel expense forms have 10 parts separated by carbon paper. They could be filled out using typewriters and impact printers, but those are giving way to laser printers — which cannot handle the multipart forms — as part of the agency's systems modernization program.

Enter current figures

Now, Forms Engine users enter travel expense data on the PC-based Forms Engine, Berger said. Users can call up their last submitted travel form and change those fields unique to the current trip. Totals and extensions are done automatically, and the resulting form is routed to a laser printer to print the number of copies specified.

In addition to boosting speed and accuracy, Forms Engine eliminates the need to procure, ship and store paper forms, Berger said. He said the old travel forms cost 19 cents each, and although he did not know the cost of the Forms Engine equivalent, he said it will save the agency money.

Berger said the agency does not yet use the communications feature of Forms Engine, which uses a store-and-forward technique to route forms to various network nodes for storage or approval. "That's logically the next step toward the paperless office," he said.

Outside the government

John E. Hodor, program manager at Computing Devices, said he is setting up a new company next month called Software Systems Engineering to sell Forms Engine outside of the government. It will be priced at $49 for a single user. The company will continue to support federal users and provide the software free to the government, he said.

Forms Engine runs on Intel Corp. 80286 machines or higher running MS-DOS 3.1 or later. It needs 400K bytes of free memory and a hard disk.

It can import word processing files and send forms in encrypted mode. A later version will be able to interact with a number of databases. It also contains a 60,000-word spell checker.

Although Software Systems Engineering will train users in forms design and programming for a fee, Hodor said he anticipates that most users will contract with his company to do that. Charges to implement most forms will fall between $200 and $500, he said.

System melds image technology

E-Quip Office-in-a-Box aimed at small offices

By Ellis Booker

Alacrity Systems, Inc. in Hackettstown, N.J., recently introduced a hardware/software system that adds fax and office copier functions to a document imaging software package.

Alacrity's $499 E-Quip Office-in-a-Box bundles Alacrity's E-Quip document filing and retrieval software with a sheet-fed, gray-scale scanner (it doubles as a copier) and an add-in card that provides a 9.6K bit/sec. Class II send/receive fax modem and a 2.4K bit/sec. data modem.

The software also includes an optical character recognition tool from Calera Recognition Systems, Inc.

The bundled offering is "aimed squarely at [small office/home office] users," said Alacrity President Jim Folts.

Bundling hardware and software to take the guesswork out of an imaging system has been done with some dedicated systems, but Alacrity is the first to try the approach on a general-purpose PC Windows platform.

"This [product] addresses not just document imaging but scanning, copying and printing," said Barry Tepper, an industry analyst at BIS Strategic Decisions in Norwell, Mass.

The functions of Office-in-a-Box are accessed through nine E-Quip applications, including Copier, Scan-to-Fax and Viewer. Selecting the copier icon, for instance, turns the PC and attached scanner and printer into a personal copier combination able to reduce or enlarge documents from 50% to 150% and collate the output. All the applications can work as background tasks.

Office-in-a-Box requires a 386-class or higher PC with 4M bytes of memory, Windows 3.1 or higher and DOS 5.0 or higher. It will be available through superstores, consumer electronics stores, office product distributors and selected dealers.

At the same time, Alacrity apparently wants to appeal to a broader base than single-user workstations. Recently, the company introduced a version of its document imaging software that runs under Microsoft Corp.'s Windows for Workgroups. E-Quip-Workgroup Imaging sells for $2,995 for a five-station kit. The kit includes a 50-MHz coprocessor card for each Windows for Workgroups client, which contains a fax server modem, a scanner interface and a high-speed printer interface.

Acorn Software, Inc. has announced VirtualBranches for OpenVMS VAX and VMS VAX.

According to the Marlboro, Mass., company, the product allows OpenVMS to view an optical jukebox as multiple virtual disk volumes that appear simultaneously mounted.

VirtualBranches enables configurations that offer an appearance and performance of 64 virtual volumes from a jukebox housing 32 double-sided optical platters and, in a larger jukebox, 288 virtual volumes from a 144-platter device.

VirtualBranches is priced from $5,800 for a Hewlett-Packard Co. 10LC Optical Disk Library.

▶ *Acorn Software*
(508) 485-9669

Open Systems, Inc. has announced Executive Information Summary, a module designed for the company's Open Systems Accounting Software family.

According to the Eden Prairie, Minn., company, the module provides up-to-the-second flash reports of strategic business performance indicators.

Users can retrieve status reports of sales, margins, inventory turns, balance sheet analysis and ratio analysis in the form of Executive Information Summary Dashboards.

Prices range from $900 to $1,200 per module.

▶ *Open Systems*
(612) 829-0011

NEC Technologies, Inc. has introduced the NEC Image RISCstation and the NEC Express RISCserver, two IBM RISC-based systems.

According to the Boxboro, Mass., company, the systems incorporate the 64-bit NEC V 4000 family of microprocessors based on the MIPS RISC architecture.

Designed to enhance the performance of Microsoft Corp.'s Windows NT, the systems take advantage of both multitasking and multithreaded I/O operations features.

The NEC Image RISCstation features 16M bytes of RAM expandable to 128M bytes, 10Base-T local bus Ethernet, local bus SCSI-II and local bus video.

The NEC Express RISCserver comes with 32M bytes of RAM expandable to 128M bytes on the system motherboard and up to 512M bytes of total system RAM when using an optional memory expansion board.

The NEC Image RISCstation costs $3,749, and the NEC Express RISCserver is priced under $10,000.

▶ *NEC Technologies*
(508) 264-8000

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95 Server

Lotus Development Corp. has announced Release 2 of the Lotus Notes:Document Imaging (LN:DI) family.

According to the Cambridge, Mass., company, LN:DI allows Notes users to easily incorporate paper-based information into their Notes applications.

Using the groupware services of Notes, users of various workgroup sizes and remote users can access and share scanned documents and fax images across LANs and wide-area networks.

Imaging systems can be enhanced in modular increments as needs grow, and users can add imaging support to their desktops.

Usability enhancements for the LN:DI Image Viewer include support for Object Linking and Embedding and an improved scanning user interface.

The LN:DI Image Viewer costs $99.

▶ *Lotus Development*
(617) 577-8500

Chorus Systems, Inc. and The Santa Cruz Operation have introduced Chorus/Fusion for Santa Cruz Open Systems Software.

According to Chorus Systems in Beaverton, Ore., the product has a microkernel architecture and extends Santa Cruz Operation systems software to ease integration of complex real-time systems. It also allows for clustered computing.

Components within the product include the Chorus/Fusion Real-Time Santa Cruz Operation Open Server, the Chorus/Fusion Real-Time Node and the Chorus/Fusion Development System.

Chorus/Fusion Development System costs $29,950; the Chorus/Fusion Real-Time Server runtime (in 10-unit quantities) is priced at $1,118, and the Chorus/Fusion Real-Time Node runtime (in 100-unit quantities) costs $400.

▶ *Chorus Systems*
(503) 690-2300

I-Kinetics, Inc. has introduced I-Bridge, a family of software products that allow Windows applications to directly access databases, programs and files on Unix servers.

Through a single driver with automatic data conversion, clients of I-Bridge can communicate with a variety of Unix data sources, including different databases.

According to the Cambridge, Mass., firm, an interactive user interface tool called I-Bridge Wizard is also included.

A starter system, including a Unix server module and two Windows client modules, costs $995.

▶ *I-Kinetics*
(617) 661-8181

Dun & Bradstreet Software has announced that its SmartStream Decision Support 2.0 application is available for Sun Microsystems, Inc.'s Solaris 2.2/SPARC computing environment.

According to the Atlanta company, SmartStream Decision Support is part of the SmartStream Series, a client/server-based enterprise solution comprising integrated business applications, comprehensive decision-support facilities and a work-flow enabled platform.

Pricing for SmartStream Decision Support running on the Solaris 2.2/SPARC distributed computing environment begins at $100,000.

▶ *Dun & Bradstreet*
(404) 239-4636

Innovatech Corp. has introduced DocWorx, an open-architecture electronic image management software product.

According to the San Diego company, the software provides complete features for the capture and input, storage and management and retrieval and output of electronic images, along with document routing.

DocWorx software modules consist of a relational database server, DocWorx clients, fax server, jukebox server, scanner interface module, high-speed image print software module, character recognition module and full text-retrieval engine.

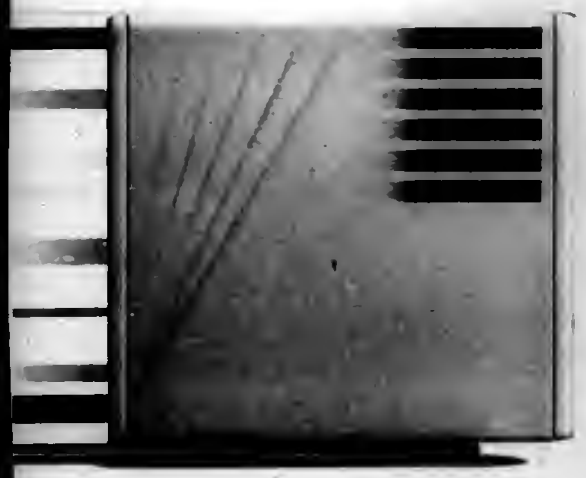
The software runs on existing networks and computer platforms and can seamlessly integrate almost any leading off-the-shelf hardware component into the system. DocWorx was designed for commercial and government markets using applications that include litigation support, image management of shareholder accounts and operations records and check processing.

Pricing starts at $5,000 for a single scalable development system.

▶ *Innovatech*
(619) 793-8789

Product shorts

Procom Technology, Inc. has announced the LANForce-5, a disk array subsystem that provides fault-tolerant storage at RAID Level 0, 1, 3 and 5. The product supports up to seven Fast SCSI-2 drives and provides 1.1 to 12G bytes of protected storage. Cost: $7,995 to $21,495, depending on the capacity of drives in the system. Procom Technology, Irvine, Calif. (714) 852-1000.... **Structural Dynamics Research Corp.** has announced I-DEAS Master Series software for IBM's PowerPC-based workstations running under IBM's AIX Unix operating system. The product provides integrated systems for solid modeling, computer-aided testing, finite element modeling and analysis and drafting and manufacturing. Cost: $6,000 to $69,000. Structural Dynamics, Milford, Ohio (513) 576-2400.



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The new FastRoute Dial-Up Bridge/Router from General DataComm puts you on the fast track to easy, seamless LAN interconnection.

A dial-up solution with full V.fast capabilities, FastRoute can provide the highest effective LAN-to-LAN throughput in the industry over regular phone lines. So its performance is superior, and its value unparalleled.

In another technical achievement, FastRoute combines multiprotocol routing with dial-up bridging. That means the unit can operate effectively in complex environments with all kinds of specialized protocols and all types of challenging remote connectivity applications.

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DECnet/OSI ships early, but interest low

By Craig Stedman

■ Still trying to find a wider market for its DECnet/OSI backbone networking software, Digital Equipment Corp. has started shipping a version supporting the Alpha AXP version of OpenVMS ahead of a schedule that was laid out earlier in the year.

The company in June said the introduction of DECnet/OSI for OpenVMS AXP would be delayed from the second half of this year into early 1994.

But Mary Ellen Fortier, DECnet/OSI marketing manager, said last week the company was able to finish development of the product more quickly than anticipated.

Digital now offers DECnet/OSI for OpenVMS on both the Alpha and VAX hardware lines, in addition to supporting its DEC OSF/1 operating system on Alpha. However, analysts said demand for the OSI transport remains low, with interest limited to a few specific markets and geographies.

"Obviously there are people who have implemented OSI, but I think the time for doing that on a broad scale has passed," said Richard Villars, director of computer network architecture research at International Data Corp. in Framingham, Mass.

OSI gets some use with workstations and minicomputers due mainly to federal government purchases, but even in those sectors it has less than a 10% market share, Villars added. "It's just hard to build a groundswell for it, especially for the full [protocol] stack or the transport layers."

Matt Holdrege, senior network specialist at PacifiCare Health Systems, Inc. in Cypress, Calif., said his company has "no need" for DECnet/OSI. PacifiCare, a health maintenance organization, uses the proprietary DECnet Phase IV for VAX-to-VAX networking and TCP/IP for its multivendor operations.

Support concerns

"TCP/IP matches OSI in every step," Holdrege said. He added that he is "very concerned" that Digital may eventually support only DECnet/OSI, which incorporates the DECnet Phase IV protocol but uses a different command language for network management than the earlier product does.

"We don't want to be forced by DEC to start using OSI," said Holdrege, who is chairman of the Digital Equipment Computer Users Society's network management working group. "Going to DECnet/OSI from Phase IV would require a massive amount of work for people with large systems and networks."

Bill Stella, senior vice president of information services at Arkwright Mutual Insurance Co. in Waltham, Mass., said he too is not interested in DECnet/OSI for the time being. Arkwright has about 30 VAX systems spread throughout its offices, with more than 1,000 users connected to the machines.

Equal support for OSI and TCP/IP

Fortier noted that Digital expects to see demand for OSI as a transport in the telecommunications and financial services industries, in addition to the government market. Companies with global networks that want to avoid address limitations are also viewed as potential customers for DECnet/OSI, she said.

However, Fortier added that the company plans to support DECnet/OSI and TCP/IP "equally across all our product lines." Digital is already shipping TCP/IP services for OpenVMS AXP and has committed to adding support for running OSI applications over TCP/IP to the OpenVMS versions of DECnet/OSI in the future.

Frank Dzubeck, president of Communications Network Architects, Inc., a Washington consultancy, said applications such as X.400 messaging and X.500 directory services are the key parts of OSI, not the transport itself. "OSI's real purpose is as a service layer," he said.

The transport is finding "certain pockets of interest" in such places as Germany, Japan and the federal government here for interagency communications, Dzubeck noted. DECnet/OSI is only likely to have "a niche presence" as a result, he said.

Integrated adds

DECnet/OSI for OpenVMS AXP integrates OSI and DECnet Phase IV network protocols, allowing existing DECnet applications to run unchanged.

- OSI Application Gateways enable communications between OSI and TCP/IP systems.
- Features include OSI addressing, supporting networks of virtually any size.
- Built-in OSI supports File Transfer, Access and Management and Virtual Terminal Protocol.
- Supports any Alpha AXP system and OpenVMS version 1.5.
- Pricing ranges from $2,116 to $21,701, depending on license type and platform.

Steve Jackowski

Managing bandwidth

"More bandwidth" seems to be the prescription for all of today's networking headaches. Sure, more bandwidth is required for new bandwidth-hungry applications such as file serving, image transfer, multimedia and videoconferencing.

But just as we learned that you don't mix batch or print traffic on the same network segments as your interactive traffic, we should be forewarned that no matter how much bandwidth we have, similar problems will arise when real-time data, file transfer, transaction processing, voice, image and video have to compete in shared networks.

LANs are shared networks. So are frame relay and Asynchronous Transfer Mode networks. The promised savior, Open Systems Interconnect, has been vanquished by TCP/IP, whose connectionless services frustrate users of both the Internet and countless Internet Protocol router backbone networks. In a connectionless network, there are no guarantees. We all compete for service.

Competition for bandwidth will only increase our business problems as our networks become less and less predictable because, in competition, someone has to lose. Even the new ATM messiah has issues of congestion and end-to-end reliability; again, no guarantees. The hungriest applications will still consume most of the bandwidth increases.

So what's the answer? Bandwidth management.

Bandwidth management says that, instead of just throwing a bigger pipe at communications problems and letting applications and users compete for bandwidth, we'll effectively manage that pipe through three mechanisms: scheduling, regulation and resource reservation.

Scheduling sets the times at which data will be transmitted. Within a given node, this can prevent competition between applica-

Jackowski, *page 57*

Health care

Electronic medical network planned

By Mitch Betts
WASHINGTON

An industry task force, filling in many of the technodetails missing from the Clinton administration's health care reform legislation, called for large insurers, medical groups and employers to implement ANSI X12-based electronic billing and payment networks by the end of 1994.

The Workgroup for Electronic Data Interchange (WEDI) said the basic X12 standards are in place for electronic medical claims, and it will publish implementation manuals by mid-1994 for distribution to doctors, hospitals, payors and EDI vendors.

The WEDI blueprint would spell the end of patients filling out insurance claim forms, but it remains to be seen whether the industry can meet the aggressive deadline.

LeRoy Anderson, senior vice president at Sheldon I. Dorenfest and Associates Ltd., a Chicago consultancy specializing in health care information systems, said it is "next to impossible" for the industry to move that fast. He said widespread EDI implementation is more likely by late 1995 or mid-1996.

Anderson said some industry players lack the money for system upgrades and others lack the incentive to get on the EDI bandwagon. WEDI officials said a federal mandate will be needed to bring stragglers into the EDI fold.

Some doctors have been reluctant to adopt EDI because of the hassle of needing four or five terminals for the proprietary formats of different insurers. But Lynn E. Jensen, vice president of the American Medical Association (AMA), said that barrier will fall when vendors of physician practice management systems upgrade their software to comply with the X12 standard.

Moving to standardized, paperless transactions could shave $42 billion from the nation's medical bill

Medical network, *page 56*

EDI: HALFWAY CURE

PERCENTAGE OF MEDICAL FACILITIES THAT USE ELECTRONIC DATA INTERCHANGE FOR THE FOLLOWING APPLICATIONS:

CLAIMS PROCESSING:	68%
REMITTANCE PROCESSING:	54%
ELIGIBILITY VERIFICATION:	43%

BASE: MARCH 1993 SURVEY OF 571 HEALTH CARE INFORMATION SYSTEMS EXECUTIVES

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High-speed networking

N.Y. hospitals join forces

Network will track patient care throughout region

By Mitch Betts

At a time when hospitals are under intense pressure to cut costs and beef up their information systems, hospitals in western New York state have decided they can no longer do it alone.

Eight hospitals in the Buffalo, N.Y., area, along with the State University of New York at Buffalo, are jointly creating a high-speed fiber network for sharing medical data that could improve patient care. The network is expected to be operational by year's end.

In essence, the Fiber Distributed Data Interface (FDDI) network provides the infrastructure to track the care of patients throughout the region, according to John Hammond, IS director at the Western New York Health Sciences Consortium.

The first applications are likely to be a shared clinical database and a centralized patient index, Hammond said. In addition, the network will be the conduit for an extensive, on-line medical library.

The on-line medical library, known as Hubnet and run by the university, will provide consortium members with the equivalent of 6.5 million pages of medical data, from sources such as the National Library of Medicine.

Teaming up

Members of the Western New York Health Sciences Consortium include the following:

- Buffalo General Hospital.
- Children's Hospital of Buffalo.
- Erie County Medical Center.
- Mercy Hospital of Buffalo.
- Millard Fillmore Hospitals.
- Roswell Park Cancer Institute.
- Sisters of Charity Hospital.
- Buffalo VA Medical Center.
- State University of New York at Buffalo.

A distinct advantage of this shared library network is that it eliminates the need for each hospital to subscribe to medical information services. Moreover, the group can buy and support a bigger system than any single institution could afford on its own, said John Loonsk, director of medical computing at the university.

Expenses consistent

"The hospitals will be paying about the same as before," Loonsk said, "and they'll be getting a lot more for their money."

The consortium contracted with Nynex Corp.'s New York Telephone unit to provide the FDDI network. "Compared with our current data-sharing capability, it's like expanding a highway from one to eight lanes," said John E. Friedlander, president and chief executive officer at Buffalo General Hospital, a key participant.

Gerald Wilson, vice president of information services at Buffalo General Hospital, said New York Telephone will serve as the switching hub for the network and route data to the right destinations.

Friedlander said the network dovetails with health care reform because it is "a multiprovider, fiscally responsible, shared solution, which otherwise would have been duplicated eight times over by each of the consortium participants."

Medical network

CONTINUED FROM PAGE 55

during the next six years, WEDI estimated. The task force, with members from a variety of insurance and medical interest groups, was formed in 1991 at the request of the U.S. Department of Health and Human Services.

Reform bills from Republicans and Democrats have incorporated previous WEDI recommendations, so the latest WEDI report is likely to affect the shape of federal legislation next year.

Confidentiality issue

WEDI unveiled model legislation to protect the confidentiality of patient data and recommended that the patient identifier be the Social Security number—an issue the Clinton administration found too hot to handle.

Privacy advocates have argued that a new numbering scheme should be invented because the Social Security number could be used to link health records with immigration, tax, welfare and marketing databases.

The issue was hotly debated within WEDI, insiders said, but the practicality and low cost of using the Social Security number won out.

WEDI's report meshes nicely with the administrative portions of Clinton's reform plan, noted Joseph T. Brophy, WEDI's co-chairman and a former IS executive at The Travelers Corp.

"Standardized and uniform data across the entire industry will make it possible to establish the regional data centers envisioned by the president," Brophy said.

Moreover, both WEDI and Clinton call for a health identification card that carries only basic administrative data.

WEDI said it will develop a standard for the data content and format of the card.

Major segments of the health care industry endorsed the WEDI recommendations, including the Health Insurance Association of America, the AMA and the Denver-based Medical Group Management Association.

Network management

StarSentry adds to range

By Elisabeth Horwitt

AT&T/NCR's StarSentry recently added significantly to the range of networking environments it can manage, through the support of third-party products.

With the support of Peregrine Systems, Inc.'s ServerView/StarSentry and StationView/StarSentry, NCR's platform can manage Novell, Inc. NetWare servers and clients.

Bridgeway Corp.'s EveoIX provides StarSentry with the ability to monitor various systems that do not comply with the Simple Network Management Protocol.

NetWork Application Technology Inc.'s Multi-Vendor Support Series, EtherMeter, is said to monitor and diagnose LAN traffic using the Remote Monitoring standard. It then sends the results to StarSentry.

Isicad, Inc.'s Command 5000 is said to collect and display network asset and configuration information on the StarSentry graphical user interface.

Jackowski: Managing bandwidth

CONTINUED FROM PAGE 55

tions for the network and its bandwidth. In a network, coordinated scheduling among network processors reduces network bottlenecks. At the lowest level, coordinated network scheduling can reduce or eliminate contention on networks like Ethernet to guarantee access to high-priority applications.

Regulation ensures that applications stay within their bounds and do not flood the network with data to the detriment of other applications. Resource reservation provides guarantees that streams of data can be delivered in a timely fashion.

Making reservations

If an application on one system needs to transmit priority data to another, it can reserve the network resources to guarantee delivery and associated quality of service. Normal quality-of-service options are throughput (message rate, number of messages and message size), network delay and reliability. Within these, refinements can be made based on the type and content of traffic.

In particular, it is possible to set the rate of a stream, the priority of a stream (in priority-based networks), the deadline for the data (including individual frames) and the types of errors that are acceptable. For example, in video transmission, bit errors may be acceptable.

To enable these types of bandwidth services, new protocols are being implemented. Perhaps most prevalent among these is the ST-II, the Internet Streams Protocol (RFC 1190).

ST-II was designed to be used across the Internet for traffic that "absolutely, positively has to be there." It actually establishes a path and then reserves bandwith, buffers and CPU cycles for every processor along a communications route.

It guarantees that time-dependent data will arrive on schedule without competing against other network traffic — sort of a commuter lane for designated priority traffic.

The Department of Defense's Simulation Network uses ST-II for real-time simulation across the Internet and worldwide videoconferencing. Berkomm, the video conferencing and video mail service established during the German reunification, also uses it. And IBM's Ultimedia client/server products rely on ST-II to support multimedia applications running across networks.

Likely candidates

As bandwidth-intensive applications such as multimedia and videoconferencing are successfully deployed in networks, other more traditional network applications, which are likely to suffer from the additional competition, are viewed as candidates for the new reservation technology. Among these are backup, file transfer and imaging. ST-II is even being considered for SNA tunnelling across Internet Protocol backbone networks.

The key to successful implementation of bandwidth-management products will be their transparency to most applications.

Already, vendors of superserver products are implementing bandwidth management under the covers of their client/server offerings.

During the first quarter of 1994, regulation products will be available to the desktop. These will transparently control access and thus eliminate overrun and congestion in existing networks. Router vendors have already begun to support protocols like ST-II to enable routed multimedia and desktop videoconferencing, and operating system vendors are looking at the new technology to facilitate truly distributed computing.

Jackowski is vice president and chief technical officer of Syzygy Communications, Inc. in Scotts Valley, Calif., which specializes in consulting and development in the area of bandwidth-management technology.

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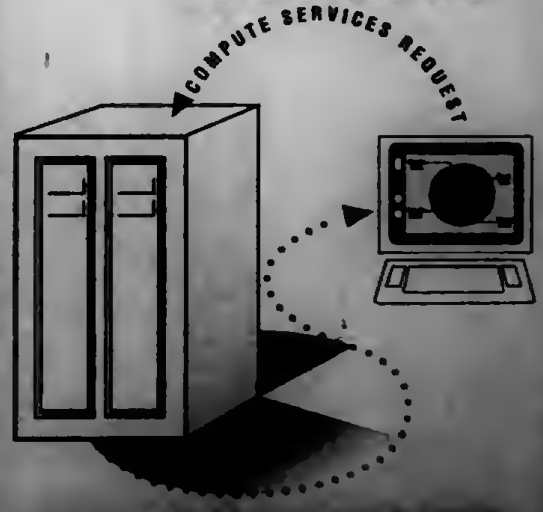

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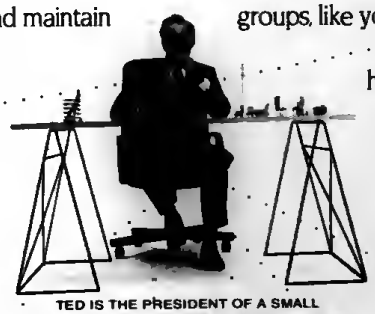

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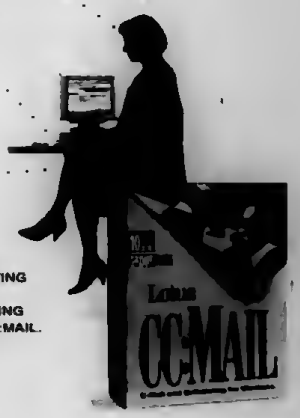

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Voice applications

Telequent links dissimilar ISDN services

By Ellis Booker

Telequent Communications Corp. in Billerica, Mass., recently announced software for linking Integrated Services Digital Network (ISDN) voice calls across multiple central office switches from different vendors.

Telequent's Distributed Call Center is said to overcome the incompatibility issues of ISDN switches from AT&T and Northern Telecom, Inc. to create regional or national virtual private networks.

United Technologies Corp.'s Pratt & Whitney division in East Hartford, Conn., has beta-tested the software since April.

According to Michael Morin, supervisor of data center operations, Telequent's offering was attractive because it used standard ISDN technology, which Pratt already uses extensively.

"Other solutions would have required proprietary hardware at each site," Morin said, adding that the Telequent setup requires only a single server at one site and only software changes to the ISDN telephones at the connected sites.

Routing made easy

Pratt's MIS Help Desk application allows about 40 individuals at four or five sites to have calls routed to them by the Automated Call Distributor server. The server is connected to sites hanging off of a private AT&T 5ESS digital switch.

Each shift has about 11 agents handling calls, although that number can increase automatically during peak hours "to take advantage of existing staff in other locations," Morin said. Incoming calls can also be routed to particular extensions based on their automatic number identification data, he said.

Telequent said more than 30 customers are using Distributed Call Center. The system requires a 386- or 486-class PC as a controller running The Santa Cruz Operation's Unix. The controller must be equipped with a $495 ISDN interface card from Telequent and Telequent's call routing/call management software. The software starts at $12,000 for up to 10 users.

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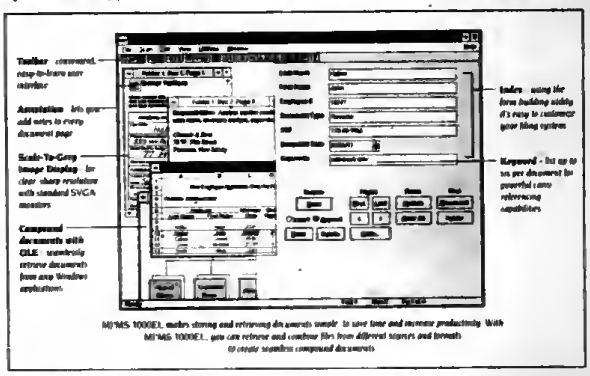
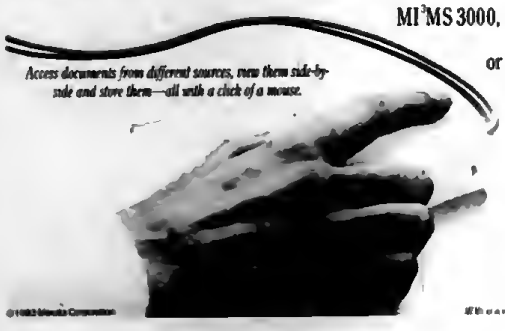


MI³MS 3000EL makes storing and retrieving documents simple to save time and increase productivity. With MI³MS 3000EL, you can retrieve and combine files from different servers and threads to create seamless compound documents.



Access documents from different sources, view them side-by-side and store them—all with a click of a mouse.

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HawkNet tool fine-tunes net performance

By Elisabeth Horwitt

HawkNet, Inc., in Carlsbad, Calif., has announced a product that is said to enable network administrators to fine-tune network performance on Novell, Inc. NetWare installations.

NetTune is said to provide a Windows-based graphical user interface for administrators to interactively adjust more than 60 internal network parameter settings, including communications settings, memory allocations and file and directory cache buffers. As adjustments are made to the parameters, users can immediately see the effect on server and network nodes, the vendor said.

Easier to adjust settings

Without the product, administrators have to set the parameters manually at the server console, or remotely with Novell's Rconsole utility, using complex commands, according to HawkNet.

NetTune provides graphical presentations of file server use patterns, which can be saved in a database file for later analysis and the accumulation of historical profiles of usage patterns.

The product runs as a NetWare Loadable Module on NetWare v3.11 and 4.01 servers, and as a Windows client application. NetWare parameters can be monitored and set from any NetWare client. The product is available this month, priced at $695 per server.

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The new ProLinea Net1 features a sleek design

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And it comes with a 486SX/25 processor and includes an extra-sharp 14" SVGA display.

The new ProLinea MT, on the other hand, features a mini-tower design with five slots and five bays. It includes Local Bus Graphics and is available in three processors, from 486SX/33 to 486DX2/66, and all are upgrade-able to Pentium technology.

While each ProLinea is unique, they all share features in common. Every ProLinea is already loaded with MS-DOS 6 and MS Windows. And each also includes TabWorks, a new software interface available only from Compaq that makes using Windows even easier. (And you more productive.)

Of course, no matter how many different models we make, each one has to be aggressively priced to continue the ProLinea tradition. That's why the ProLinea Net1 starts at just $1,099, the mini-tower at $1,449, and multi-media models at just $1,549.* All of which is good math no matter how you calculate it. For complete details, just call 1-800-345-1518. **COMPAQ**

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NetManage, Inc. has introduced Newtwatch, a Simple Network Management Protocol (SNMP)-based desktop management system for Windows.

According to the Cupertino, Calif., company, the product provides desktop management and desktop analysis on any TCP/IP network running SNMP.

Newtwatch can also analyze and manage network resources including routers, bridges and hubs. By pointing and clicking, users can zoom in on a remote PC and see what software it is running; they can also dynamically view statistics, view and administer hardware and network configuration, manage hosts and maintain network lists by either icon or table views.

Also included is a software-only TCP/IP packet trace and analysis package, called Newtrace, that lets users capture, view and analyze all inbound and outbound TCP/IP traffic on a Windows-based PC.

Newtwatch costs $495 per copy.

▶ *NetManage*
(408) 973-7171

Newport Systems Solutions, Inc. has introduced Call Connection Manager support for its line of LAN2LAN/MPR and LAN2PC products.

According to the Newport Beach, Calif., company, Call Connection Manager can be used for applications that occasionally require users to dial up a remote LAN, such as electronic-mail messages and network backup.

Call Connection Manager supports dial backup, activity calling, bandwidth on demand and call scheduling to establish and disconnect calls.

The product supports LAN2LAN/MPR in a dedicated, stand-alone PC and on Novell, Inc.'s NetWare platform.

The base product with two wide-area network ports costs $2,490.

▶ *Newport Systems Solutions*
(714) 752-1511

Hewlett-Packard Co. has introduced the HP J2540 Router PR, a remote-access router with built-in flash memory, plug-and-play capabilities and advanced network management.

According to the Palo Alto, Calif., company, the product supports industry-standard TCP/IP and Novell, Inc. IPX routing protocols and bridging.

The router offers network management using Simple Network Management Protocol and provides one Ethernet port with a choice of baby "N" connector or attachment unit interface connector and one synchronous wide-area connection for point-to-point protocol and Dialed Services through V.25 bis.

A flash memory feature is also included.

The HP J2540 Router PR costs $2,995.

▶ *Hewlett-Packard*
(415) 857-1501

Multi-Tech Systems, Inc. has announced an X.25-compatible MultiModem II based on AT&T's 16.8K/19.2K bit/sec. V.32terbo open standard.

According to the company, which is based in Mounds View, Minn., the MT1932XP combines the functions of a full-duplex dial nr leased-line modem, a send/receive fax machine, an X.25 packet assembler/disassemhler (PAD) and a dial-up X.32 pad in a single desktop modem.

Support for up to four "virtual" X.25 or X.32 sessions through a single PAD port is provided, and the MT1932XP offers standard or asynchronous modem operation over dedicated or dial-up phone lines.

The product costs $949 and comes bundled with MultiExpress Datacomm and MultiExpress fax software. It will ship in the first quarter of 1994.

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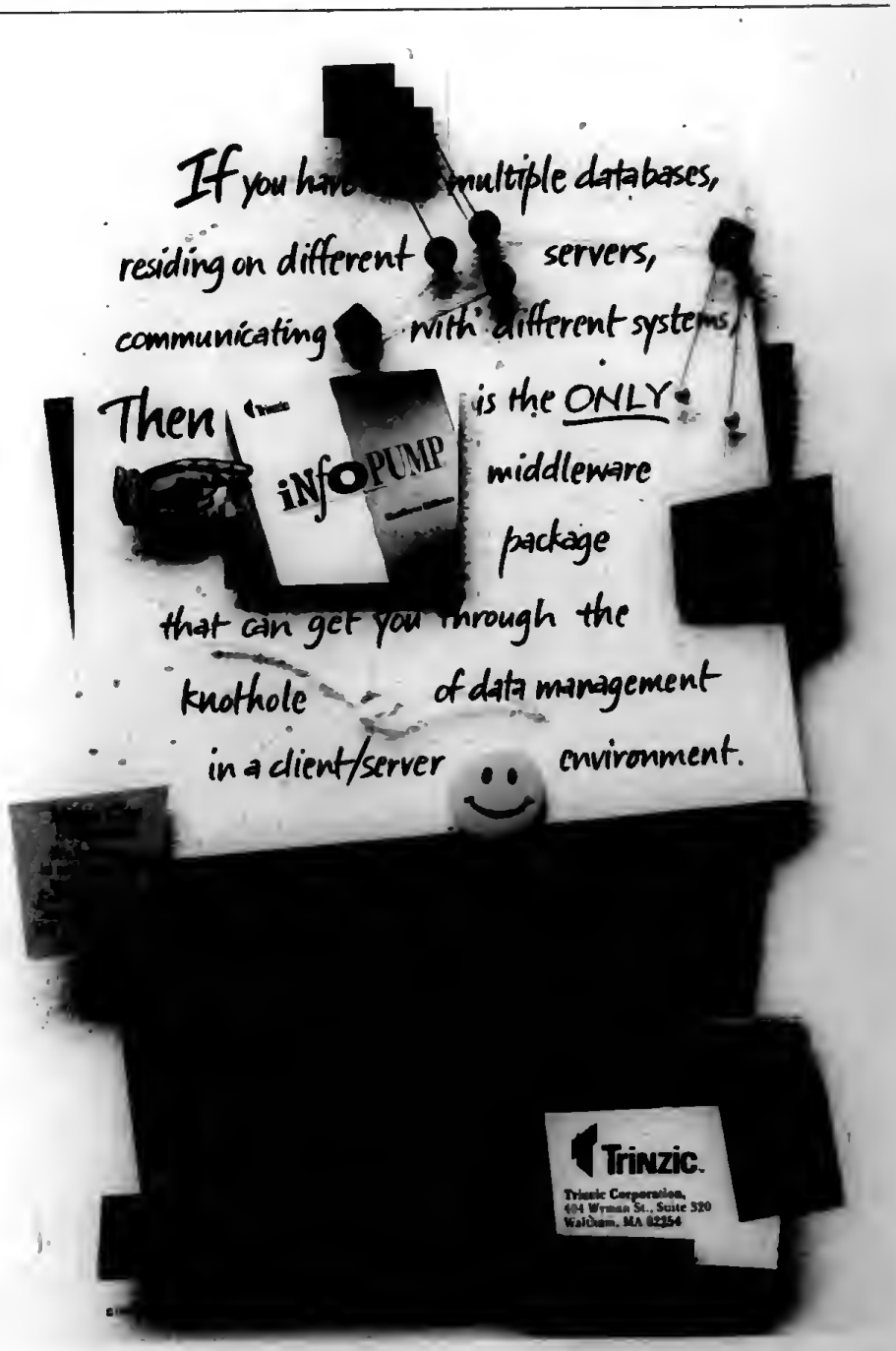

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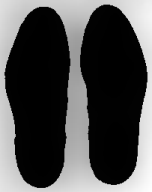

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Vendors skip TPC benchmark ratings

Budgetary and time constraints cited as driving forces

By Mark Halper

There was something conspicuously absent in the recent spate of multiuser computer system announcements: benchmark performance ratings under the Transaction Processing Performance Council seal.

TPC numbers, once a mainstay of new product performance claims, have taken a backseat as vendors concentrate more on emphasizing the applied sciences of their machines.

In an era of budgetary restraints, the price of running TPC benchmark tests is nudging the numbers further from the foreground. What's more, vendors are opting to put off the time-consuming benchmarking process to quicken the pace of product introductions and shipments.

The three to six weeks it can take to complete a test can be critical time for a customer in dire need of a new system.

"It seems like manufacturers are pulling back in their enthusiasm for getting these benchmarks out quickly," said Craig Sultan, an analyst at Montgomery Securities, Inc. in San Francisco.

Kim Shanley, chief operating officer of the San Jose, Calif.-based TPC, said the council has issued about as many test results this year as last year, around 100. And he said the council has signed on new clients, including Amdahl Corp., Silicon Graphics, Inc. and NEC Corp.

He noted, however, that vendors are taking a longer time to issue results because they are running the more time-consuming and costly TPC-C test. This test measures five simultaneous processes, rather than the single-process TPC-A and TPC-B tests.

The council implemented TPC-C last year to provide more realistic performance measurement. A TPC-C test averages two to three months and a cost of $500,000, while TPC-A testing takes about four to six weeks and costs about $100,000, Shanley said.

TPC results were all but missing during the past two months, when Hewlett-Packard Co., Sequent Computer Systems, Inc. and Pyramid Technology Corp. introduced high-end wares.

Sequent and Pyramid issued no TPC numbers at all. While HP reported a TPC rating of 2,110.5/tpmC for a six-processor Unix version of its Corporate Business System running an Informix Software, Inc. database, it did not provide TPC rankings for any other processor configurations (the Unix line ranges to 12 CPUs) or for any of the proprietary versions of the system. Instead, it issued its own estimates.

Pat Adamiak, product line manager for HP's proprietary line, the HP 3000, explained that earlier this year his group "decided to back off on how much we use [TPC numbers]."

While TPC rankings demonstrate raw performance of a particular task, they do not accurately reflect real-world performance, he said.

For instance, a TPC ranking would not demonstrate how effectively a system such as the HP 3000 runs a complex work load of chores including order entry, year-end financial accounting and manufacturing resource planning, he said.

Vendors are mindful that users want realistic performance portrayals.

"Some believe the benchmarks, and some believe it's just more vendor marketing hype — or benchmarketing," Adamiak said.

"When it gets down to the real world, benchmarks are benchmarks, and the needs of the users of specific applications are different," said Bill Rieke, director of strategic systems and a Pyramid user at The Promus Cos., a Memphis-based owner of several hotel chains.

Pyramid has yet to release TPC rankings for the Nile multiprocessing system it unveiled in early October, although it said it will do so eventually. "It takes a lot of resources and time to run benchmarks," said Judson Groshong, Pyramid director of product marketing.

Kevin Joyce, Sequent product manager for future systems, noted that TPC tests "are not something you can do overnight, and they're getting very expensive to do." Sequent did not issue TPC numbers with its Symmetry 2000 line in October but said it would eventually do so.

Why not?

Some of the reasons vendors are balking at issuing TPC rankings:
- Increasing emphasis on real-life performance.
- The "Oracle cloud."
- TPC tests are expensive.

Casting aspersions

Montgomery Securities analyst Craig Sultan noted that a cloud hangs over the TPC testing process, following allegations by The Standish Group that Oracle Corp. cheated on testing procedures. Oracle has denied that claim.

Cross-platform scheduler released

By Johanna Ambrosio

■ Fourth Dimension Software, Inc. (4D) has joined the ranks of distributed systems management purveyors. The company's first wares, available now, let users schedule jobs on several different computing platforms.

Called Control-M, the package runs on IBM computers including MVS-based mainframes, the AS/400 and RS/6000 machines under AIX. In addition, Control-M runs on Sun Microsystems, Inc.'s architecture under the Solaris operating system and on Digital Equipment Corp. VAXs under VMS.

Unique to 4D's implementation, said Meta Group, Inc. analyst Fred Joy, is the ability to schedule jobs that depend on each other on different platforms — for example, a payroll job has to finish on the mainframe to feed the information to a check-writing job on a Unix machine. This is called cross-platform dependency. "I'm not aware of anything else out there that does this," Joy said.

To manage all the platforms in one location, 4D has also announced the Enterprise Control Station (ECS), which provides a common user interface and shared database for all supported 4D products. Besides the scheduling software, 4D will introduce over the next few years packages for distributed security, console automation and backup, among other tasks, according to 4D Chairman Yossie Hollander. All will use the ECS as the central means of control.

With ECS, Hollander said, users can manage by exception. In other words, users are alerted only to problems or incidents that seem out of the ordinary. This allows one operations staffer to manage several machines at once, he said.

Monitor consolidation

Some customers are excited about the prospect of monitoring different functions from one location. "I'm real anxious to get ECS up and running," said Jim Rinke, manager of scheduling and control at Texaco, Inc. in Houston. "Right now we have three consoles to monitor three different JES systems." The company has tested Control-M on the RS/6000 — it is now using the mainframe version — but has no production scheduling going on in the RS/6000.

Next year, 4D will introduce versions of Control-M that include Unix machines from Hewlett-Packard Co., Data General Corp. and Unisys Corp. as well as Novell, Inc.'s NetWare, IBM's OS/2 and Microsoft Corp.'s Windows NT. Control-M prices range from $750 to $60,000.

4D, which provides mainframe systems management software, is based near Tel Aviv, with U.S. headquarters in Irvine, Calif.

Relational databases

Object Design boosts its database product

By Kim S. Nash

Object Design, Inc. unveiled an upgrade to its flagship ObjectStore object-oriented relational database last week that sports features designed to make the product more appetizing for mainstream business applications.

With Release 3.0, the company rearchitected ObjectStore but promises the product is compatible with existing versions. New features include the following:

- The ability to back up and recover without shutting down the database and accompanying applications.
- Interoperability across operating systems. Previously, an ObjectStore database running on Solaris from Sun Microsystems, Inc., for example, could not talk to a database on IBM's OS/2.
- Reduced minimum database size, down to 2K bytes from 16K bytes, which can make the product less cumbersome to deploy across networks.

"In the past, we've focused on building higher

Object, *page 72*

What's in store

Object Design is working with IBM to build gateways between ObjectStore and several IBM databases, including DB2, DB2/2 and IMS. The gateways are due out late next year.

Prices for ObjectStore 3.0 start at $3,500. An average workgroup configuration will cost between $15,000 and $25,000, depending on number of users and platform, according to Object Design.

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New architectures

HP moves into 'post-RISC' era

Users await advent of powerful system that runs multiple operating systems

By Mark Halper

A week after Hewlett-Packard Co. began outlining plans for a "post-RISC" architecture, users, while concerned with migration issues, said they would look forward to the next generation for simultaneous support of multiple operating systems, among other reasons.

While users eagerly await the quantum performance leaps that the 64-bit chip and its billions of instructions per second portend [CW, Dec. 6], users seemed equally intrigued by the prospect that HP would use the device to sell an all-in-one box supporting HP's proprietary MPE/IX, its HP/UX Unix and perhaps other operating systems, such as Microsoft Corp.'s Windows NT.

> "This could be the platform that could run MPE and Unix concurrently." Eric Fisher, Fisher Consulting Systems, Inc.

HP's MPE customers now purchase the company's HP 3000 line, while Unix users buy the HP 9000. Customers who run both systems say an all-in-one box would ease their purchasing processes and facilitate interoperability between MPE and HP/UX (see related story page 74).

"It would be nice to put everything on the same machine," said Rodger Lindquist, manager of business systems development at Hercules, Calif.-based Bio Rad Laboratories, Inc., which uses an HP 3000 for business applications and an HP 9000 for service and communications functions.

"Nobody has come up with one engine that fits all yet, but if they could, would it be a good thing? I think so," said Isaac Blake, technical support/advanced planning supervisor for the city of Tempe, Ariz. "We need to make the operating system a secondary issue."

Kernel the key

Peter Rosenbladt, group research and development manager for HP's computer systems organization, clarified that support for multiple operating systems is inherent in the design of an operating system's kernel rather than in the processor architecture.

By using a "microkernel" operating system design, developers narrow the content of a kernel, thereby increasing the chance of its mating with more than one operating system by decreasing the chance of mismatches.

But, Rosenbladt acknowledged, microkernels are written to specific processors. And the next-generation chip could be the first from HP that would support MPE/IX and HP/UX in the same box.

Ironically, before HP offers that capability, it is expected to offer NT in the same box as MPE/IX and, separately, in the same box as HP/UX.

That will happen when HP finishes its reworking of its present PA-RISC chip to support the same byte ordering scheme used by Intel Corp.'s Pentium and x86 line of processors, which power the present population of NT machines.

Unlike the PA-RISC chip, "post-RISC" architecture — as senior vice president and head of research Joel Birnbaum refers to HP's next generation — uses a Very Long Instruction Word (VLIW) technology that enhances the processor's internal parallel processes.

While the architecture combines some of HP's present superscalar RISC designs, some users questioned whether it also moves away from RISC's reduced instruction set dictums by making instructions more complex.

Quantity, not complexity

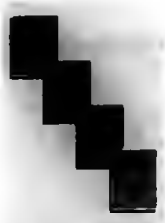
Eric Fisher, principal at Fisher Consulting Systems, Inc., pointed out that VLIW technology is consistent with RISC in that it does not make instructions more complex; rather, it simply increases the number of instructions per cycle.

Fisher further noted that VLIW's internal parallelism would make it "ideal" for a microkernel design that accommodates multiple operating systems.

"This could be the platform on which HP will deliver something which has been rumored — a machine that could run MPE and Unix concurrently," he said, noting HP could also throw NT into the mix.

Meanwhile, Rosenbladt said HP is also exploring a switch from a CMOS fabric to Bi-CMOS to improve microprocessor performance. He noted, however, that "Bi-CMOS is not now a mainline microprocessor technology, nor is it likely to become one."

Bi-CMOS provides faster circuitry than CMOS but is far more expensive. Its typical applications include memory chips.



Future of HP

An all-in-one box would help HP reduce costs by eliminating the overhead of dual marketing and support operations and cutting back on a few manufacturing processes now employed to differentiate the guts of the HP 3000 from the all but identical HP 9000.

HP's leading "post-RISC" proponent, research chief Joel Birnbaum, is regarded by many as the father of commercial RISC. He helped IBM develop the technology and left for HP after IBM declined to market it.

HP derived its VLIW processor technology from two now-defunct companies: Multiflow and Cydrome.

Object

CONTINUED FROM PAGE 69

and higher performance, but now we're trying to make objects safe for business-critical applications," said Ian Schmidt, director of product marketing.

Moving to mainstream

Most ObjectStore users deploy the product in scientific and engineering applications such as computer-aided design.

Object Design, like other object database makers, sees opportunity in persuading information systems shops to use object technology in more mainstream systems, such as manufacturing and inventory [CW, Nov. 22].

Meanwhile, IBM has a large hand in shaping future versions of ObjectStore. IBM bought an estimated 20% equity stake in the company early this year, while AT&T made an undisclosed but "much smaller" investment last month, according to another Object Design employee.

IBM role

IBM's influence is likely to be evident in upgrades planned for next year, Schmidt said. For example, ObjectStore is expected to be ported to run on symmetric multiprocessing machines, starting with IBM hardware, he said. "Whatever we do, IBM will play a large part in our direction," he said.

Versions of ObjectStore will also be shrunk for various vendors' laptop computers, he noted. Unlike rivals in the object-oriented database market, ObjectStore runs in several desktop environments in addition to Unix, including Novell, Inc.'s NetWare, OS/2 and Windows.

A Microsoft Corp.'s Windows NT edition is in beta testing at 60 sites and is due to ship in next year's first quarter.

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Briefs

Czech bank automates

Banka Bohemia A.S. in Prague has installed one of Stratus Computer, Inc.'s XA/R fault-tolerant computers to automate its international payments processing, which it previously handled through manual telex and cable systems. The XA/R system was sold by Ing. C. Olivetti & Co., one of Stratus' resellers. It runs international payments software developed by Manof Communications Systems (International) Ltd. in Israel. Banka Bohemia is trying to sell time on the system to other Czech banks.

IBM package spots fraud

IBM recently unveiled software intended to spot billing fraud and abuse in the health care industry. The software, which looks for suspicious physician billing patterns by comparing medical claims in a medical specialty or region, has been tested by two insurance companies and is slated to be available by the end of the year, IBM said.

Japan's top vendor

For the fourth straight year, *Nikkei Computer* magazine has named Nihon Unisys Ltd., a venture of Unisys Corp. and Mitsui & Co. in Japan, as the top-rated Japanese computer vendor as determined by nearly 5,000 Japanese computer users.

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Minicomputers

HP 3000 gap turns users to third parties

By Mark Halper

■ Customers of Hewlett-Packard Co.'s proprietary HP 3000 minicomputer need software that partitions the machine's PA-RISC microprocessor to allow multiple users simultaneous access and minimize agonizing waits.

Although users said HP has indicated its intentions to develop what it calls a High End Scheduler, they do not expect the product soon and are relying on third-party products.

HP did not elaborate on its product plans.

Traffic jams

While users said they remain impressed with the sheer power that HP continues to build into the 3000, they said they are concerned about bottlenecks that can cause a high-priority user to wait while a lower-priority user completes a task.

"Today, all available CPU power goes to a single process," noted Jerry Affholter, systems manager at Medstat Systems in Ann Arbor, Mich. Without the CPU allocation software, he noted, "you cannot allocate percentages of the CPU. Instead, you have to line up requests."

"The user community as a whole has been requesting a CPU dispatcher from HP for a while," said Isaac Blake, technical support/advanced planning supervisor for the city of Tempe, Ariz.

Blake noted that while Tempe has little need for the software because it uses scattered smaller boxes that provide departments with access when needed, "for people who have large behemoth boxes, I can see where it's a concern."

Medstat, which runs a "behemoth" HP 3000 Corporate Business System accessed by Fortune 100 companies for decision support and analysis of health benefit options, is one company that could use CPU dispatching.

"We need guaranteed CPU allocation for our clients," Affholter explained.

"If we simply throw power at the machine, that doesn't assure them they won't have to wait," he said.

Medstat's urgent need for better CPU dispatching derives from a classic bane: raised customer expectations. Affholter explained that Medstat's clients have come to expect the same sort of CPU response during daytime hours that they are accustomed to during off-peak times when they are not competing for CPU access.

"During the day, their throughput could be 10 times less, and their expectations are shattered," Affholter said.

Waiting for HP

Blake noted that although third-party products such as Overlord from Kelly Computer Systems in Mountain View, Calif. address the problem, users would prefer a product from HP.

"They feel comfortable that if they have a problem, they can just call HP," he noted.

But for HP, the decision of whether to offer a dispatcher could boil down to simple economics, Blake noted.

"The question HP fights is, do you bundle everything into an operating system and then have to maintain it?" Blake said.

Users were not optimistic that HP would offer its dispatcher soon. The company actively tends to a list of user demands, but, according to Affholter, the dispatcher is not high in the queue.

"I don't think it's in the Top 20," he said.

Briefs

Informix, NCR join forces

Informix Software, Inc. plans to join **NCR Corp.** to build a version of the Informix-OnLine database for massively parallel processors, according to Phil White, Informix chief executive officer. **Sybase, Inc.** recently announced an alpha release of its SQL Server database, codeveloped with NCR. Informix also plans to create a 64-bit edition of OnLine for **Digital Equipment Corp.**'s Alpha platform, White said. The products are expected to ship late next year or in early 1995.

ISSC, TI offer utilities aid

IBM's Integrated Systems Solutions Corp. (ISSC) and **Texas Instruments, Inc.** have joined to offer client/server procurement and materials management solutions to the utilities industry. TI will provide business process reengineering and software, while ISSC is responsible for implementation, integration and support. The alliance is aimed at reducing purchasing and management costs and shortening procurement cycles. **Arizona Public Service** is helping develop software to support parts procurement, inventory and electronic data interchange.

NCR sails with Seafirst

Seafirst Bank of Seattle has contracted with NCR to install NCR self-service banking systems at locations such as bank branches, shopping malls and retail stores. The systems give functions such as the ability to calculate loans, obtain information on investment options, reorder checks and stop payments. In another deal, NCR won a $5.5 million contract to supply **Glendale Federal Bank** in Glendale, Calif., with automated teller machines at 200 locations.

System wins award

Government Services Canada has awarded a $5.5 million systems integration contract to **American Management Systems** for a system designed to streamline the administration of $6.1 billion in annual purchases.

Stratus ports file package

SoftCom Systems, Inc., a software vendor acquired in October by **Stratus Computer, Inc.**, plans to port **Sterling Software, Inc.**'s Connect:Direct file transfer software to run on Stratus' XA/R fault-tolerant systems. It will also distribute the package. Connect:Direct is slated to be available for Stratus' proprietary VOS operating system in the first quarter of next year and for its FTX Unix derivative shortly thereafter. Prices are expected to range from $25,000 to $40,000. SoftCom was known as BellSouth Systems Integration prior to the acquisition.

Claims system debuts

Digital and **Price Waterhouse** are jointly marketing an image-based claims processing system to carriers of workers' compensation and disability insurance. The new system combines Price Waterhouse software with Digital's DECclaims image management technology and a computing platform, including PCs and Alpha AXP servers running **Oracle Corp.**'s database and **The Santa Cruz Operation**'s SCO Unix operating system. The joint offering grew out of a project in which the two companies installed a claims processing system at the **Injured Workers' Insurance Fund** in Towson, Md.

Oracle, Sherpa tools link

Sherpa Corp. and **Oracle** said they will integrate their products for manufacturing companies. The companies will link Oracle's Manufacturing package with Sherpa/PIMS, a set of tools for managing the data required to design, manufacture, support and improve the production process. The two companies will link the products through Oracle application programming interfaces and will develop a common data model.

HP, IBM provide recovery

Hewlett-Packard Co. and **IBM** said they will provide joint disaster recovery services for customers in combined HP and IBM environments.

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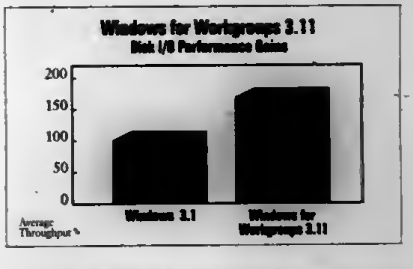

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Microsoft WINDOWS FOR WORKGROUPS

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The disk I/O performance gains represented were measured with Disk WinMark™ performance tests using WinBench™ version 3.11 from Ziff-Davis Labs. Two test configurations were used and the performance results averaged to produce a single percentage: Northgate® Slimline 320 with Intel® 80386/20 CPU, 8MB RAM, 2048KB RAM Cache, 200MB hard disk, IDE controller, and no hardware disk cache; Zenith® Z-note 425L with Intel 80486/25 CPU, 4MB RAM, 512KB RAM Cache (SmartDrive 5.0 with Windows 3.1, 32-bit file access with Windows for Workgroups 3.11), 200MB hard disk, IDE controller and no hardware disk cache. Tests were run using shipping versions of Windows 3.1, Windows for Workgroups 3.11 and MS-DOS® 6.2. Tests not independently verified by Ziff Communications Company. Zenith is a registered trademark of Zenith Electronics Corporation. Intel is a registered trademark of Intel Corporation. WinMark and WinBench are trademarks of Ziff-Davis. Northgate is a registered trademark of Northgate Computer Systems, Inc.

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Software Engineering of America is offering the VSE version of Total Remote Management Solution (TRMS) 4.2, an integrated report management system for on-line viewing, distribution and archiving of end-user/production reports.

According to the Franklin Square, N.Y., company, features include the ability to accumulate more than one report simultaneously, menu-driven interfaces under VTAM and CICS, a high-speed VSAM database structure, full internal security, PC report downloading and the ability to perform archiving while accumulating and bundling reports.

TRMS/VSE is priced from $18,000 to $40,350.

▶ *Software Engineering of America*
(516) 328-7000

Compuware Corp. has announced Release 3.0 of File-AID/PC, a product designed to improve the efficiency of programmers working with PC-based IMS databases in the Micro Focus environment.

According to the Farmington Hills, Mich., company, File-AID/PC Release 3.0 offers editing, navigating and printing capabilities along with support for downloading and editing additional types of IMS databases.

The product offers command keys that enable users to move more directly to specific database segments when producing or analyzing test IMSVS86 data.

Prices for File-AID/PC Release 3.0 start at $12,000.

▶ *Compuware*
(313) 737-7300

Cray Research has announced the Cray Research Network Disk Array, a bulk storage device designed to reside on high-performance computer networks.

According to the Eagan, Minn., company, the product enables users to store data on the network instead of on a storage device connected to and accessible only from a single system on the network.

The device can be partitioned between multiple systems on the network.

If the normal path is unavailable, users receive an alternate access path and the product is connected through a High Performance Parallel interface switch.

Pricing for the Network Disk Array begins at $450,000.

▶ *Cray Research*
(612) 683-7100

Storage Concepts, Inc. has introduced the Concept 810 Series of real-time redundant arrays of inexpensive disk (RAID) storage subsystems.

According to the Irvine, Calif., company, the product provides 20M byte/sec. sustainable transfer rates with an upgrade path to rates as fast as 50M byte/sec.

The Concept 810 offers up to 10G bytes of storage capacity and is targeted for applications that include teleradiology, digital X-ray and pictorial archiving and communications systems.

Prices for the Concept 810 Series start at $16,800.

▶ *Storage Concepts*
(714) 852-8511

Business Partner Solutions, Inc. has introduced MobilEra Monitor, a message queue and system audit journal monitor that notifies IBM AS/400 users of any system error conditions, such as authorization failures, password violations, critical storage messages or pending disk failure.

According to the Westmont, Ill., company, the product notifies operators if batch jobs finish within a configured start and stop time.

The product can also submit a user-written job to react and fix the problem.

Mobile Monitor costs $595 per license.

▶ *Business Partner Solutions*
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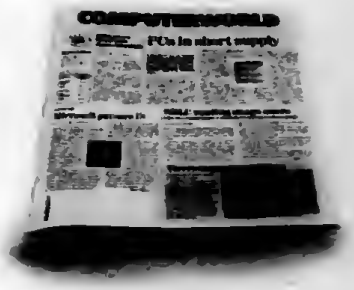

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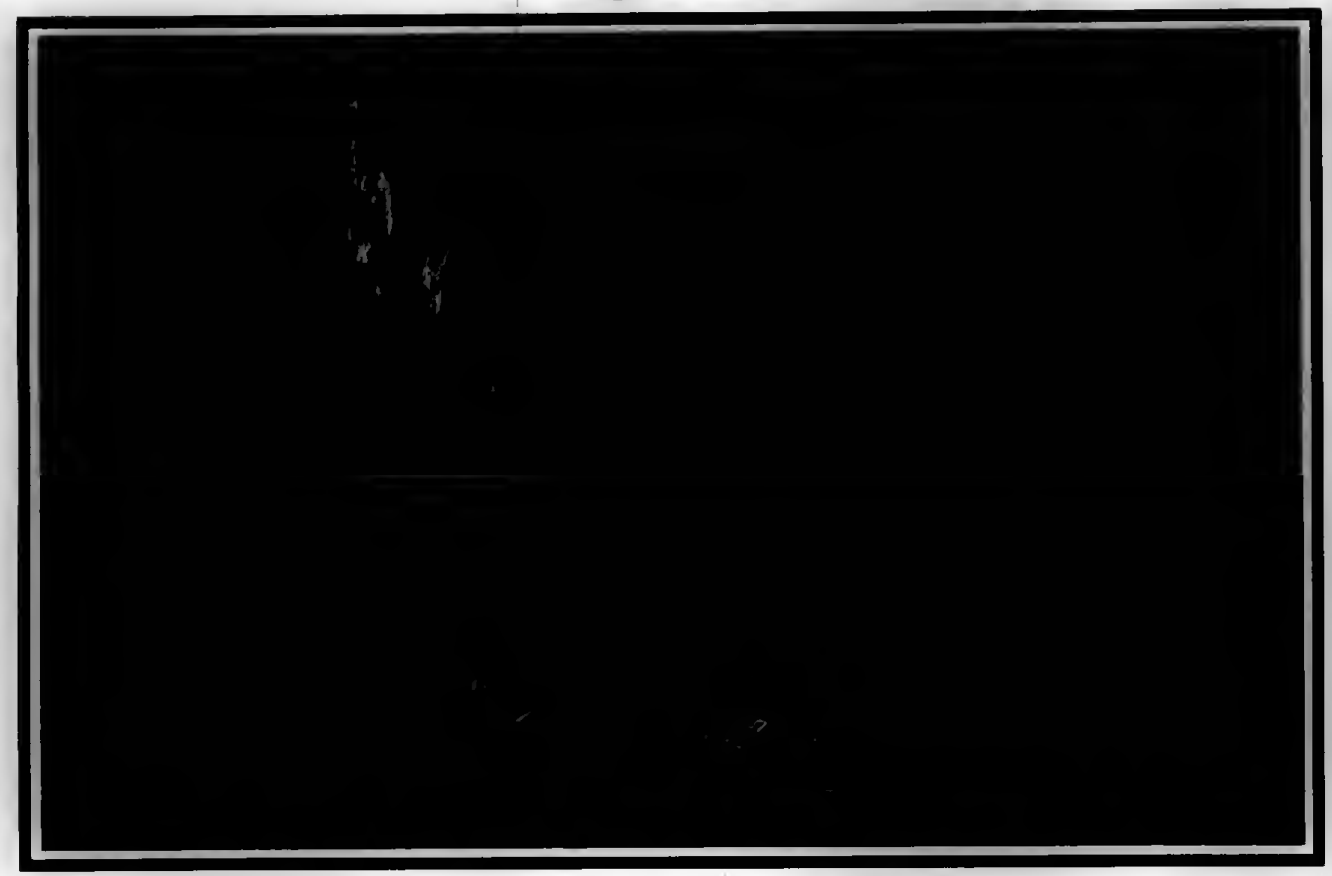

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Next steps up to developers' praise

Company hopes to ride 486 through corporate America's door

By James Daly

Six months after its introduction, Next Computer, Inc.'s NextStep 486 is finding a welcome home in corporations weary of wrestling with complicated in-house application development.

End users hope the object-oriented programming that NextStep 486 affords will relieve the software bottleneck that has prevented them from quickly writing and adapting programs to take advantage of powerful computer systems and shifting business opportunities.

"When you're building something extremely complex, [NextStep 486] is a godsend," said Steven Jacobson, a deputy at the Los Angeles County Sheriff's Department who used NextStep 486 to build a decision-support system capable of handling several hundred users.

In May, Next took the formerly proprietary NextStep and ported it to the Intel Corp. platform. Since then, NextStep 486 users have praised a design that makes it easier to reuse large chunks of software code.

At least for the tough jobs.

On less sophisticated applications, however, "the delta between NextStep and other application development environments is not all that great," Jacobson said. "If you're just putting together an order-entry system, NextStep may seem like overkill."

NEXTSTEP 486 VITAL STATISTICS

CORE TECHNOLOGY:
A multitasking and multithreaded Unix operating system based on the Mach operating system kernel.

ADD-ONS:
Comes bundled with client support for Sybase and Oracle databases.

COST:
$795; $1,995 for developer version.

SHIPMENTS IN 1993:
50,000

PROJECTED SHIPMENTS IN 1994:
100,000

REVENUE FROM NEXTSTEP 486 IN 1993:
$10 million to $12 million

COST TO CREATE NEXTSTEP:
$100 million

Source: Next Computer, Inc.

Betting it all

For Next, the success — or failure — of the company hinges on its ability to market NextStep. "Next knows that its role in the cosmos is getting narrower and narrower," said Randall Stross, the San Jose (Calif.) State University historian and author of *Steve Jobs and the Next Big Thing*, a critical examination of the company. "NextStep is the whole ball of wax."

In February, the company abandoned its slow-selling workstations and focused solely on its highly regarded NextStep software. "We're not going after the whole banana anymore," Jobs said. Instead, Next has thrown all its weight behind NextStep 486, which Jobs calls the "Trojan horse" that will finally get the firm's foot in the door of corporate America.

Next continued to court the corporate market last month when it announced that SunSoft, Inc. will license NextStep and incorporate it into Solaris, Sun Microsystems, Inc.'s Unix derivative. A number of corporate developers said the move bolsters their confidence in NextStep's staying power.

The power of NextStep has already attracted orders from companies such as McCaw Cellular Communications, Inc., First Chicago Corp., Citicorp and WilTel Communications Systems, Inc. Most observers said NextStep delivers the kind of object-oriented programming environment that potential rivals such as Taligent, Inc. or Microsoft Corp.'s Cairo project will not deliver until late next year or early in 1995.

Although NextStep has been available for more than four years, the system's original proprietary nature has made it a difficult sell. "Next was never an option before because we had no interest in going to a new platform," said Mike Adelson, a project manager at Chrysler Corp. subsidiary Chrysler Financial Corp. in Southfield, Mich.

Adelson said NextStep 486 will be used in a client/server environment to support more than 100 branches throughout North America. The company's first application developed with the system will be for retail auto financing, Adelson said.

Putting NextStep on the Intel platform also lessens the fear factor. "People don't want to think that they have to junk their systems to tap into Next; this lessens that perceived risk," said Dwight Koop, executive director of information technology at Swiss Bank Corp. in Lisle, Ill.

Long way to go

But Next still faces an uphill battle to gain acceptance in the world of 486-based PCs.

First there are the thorny financial obstacles. The user version of NextStep 486 costs $795, but extra circuit boards, memory and disk drive capacity to bring a

Next, *page 84*

Client/server tools

LoadRunner cuts costs by estimating user support

By Melinda-Carol Ballou

Enabling developers to test performance and then tune client/server applications before deploying them can be key to their success, analysts say. However, it can also be prohibitively expensive to set up "real world" scenarios.

New testing tools from Mercury Interactive Corp. will allow developers to cut those expenses by testing client/server application performance through emulating the load placed upon it by a full range of users, according to company officials and industry analysts.

Dubbed LoadRunner, the new tool allows testers to run multiple emulated users in parallel, each operating a real client application off the server, they said. Rather than require a machine for every user, LoadRunner can run many virtual users on each machine, officials said. These tools carry over to client/server development, a concept played out in host-centric performance testing.

Beta testers of the product said they realized savings using LoadRunner.

US West Communications, Inc. in Denver has been using LoadRunner to evaluate the performance of a client/server application, according to Rand Lewis, a member of the technical staff.

"It's done a pretty good job of indicating how many users we can support with our application," Lewis said.

To use this tool, developers run typical transactions or other user processes with their application in "record mode," Lewis said. LoadRunner will record those actions and play back as many instances of a user process as are required to create a script. This script is sent against the server to test the application, Lewis said. Scripts can also be created and modified using the scripting language for LoadRunner.

"The value of LoadRunner is that we didn't have to bring in 100 users and pay them to test the application — it did the testing for us," Lewis said.

BT, another beta site for LoadRunner, was able to use only six Sun Microsystems, Inc. workstations to test an application that will run on 30 workstations, according to Mike BeHarry, a testing consultant at the company.

Tool time

THE ADVENT OF CLIENT/SERVER APPLICATION DEVELOPMENT IS GENERATING THE NEED FOR NEW COMMERCIAL TESTING TOOLS BECAUSE CLIENT/SERVER APPLICATIONS HAVE THE FOLLOWING CHARACTERISTICS:

- ✔ They are event-driven, so the response is relatively unpredictable.
- ✔ They are under end-user rather than programmer control.
- ✔ They must span a range of client and server platforms and developers are creating more of them.

Source: Hambrecht & Quist, Inc., San Francisco

The release of these tools from Mercury Interactive is part of a wider trend. Client/server computing is spawning a market for graphical user interface (GUI)-based testing software that is likely to expand from around $50 million in 1993 to around $90 million by the end of 1994, according to Neil Weintraut, technology analyst at Hambrecht & Quist, Inc. in San Francisco.

In-house testing tools used for character- and host-based applications used to be the norm, largely because the developer controlled the development process. But the development scene is becoming dramatically more complex, with the advent of client/server, event-driven systems and GUIs, which make the testing process more unpredictable.

These factors and others (see chart) are resulting in the greater availability of commercial testing tools for client/server, Weintraut said.

Weintraut added that this has happened so fast that the majority of developers are not aware of the availability of these tools.

Key players in this market include Mercury Interactive, Autotester, Inc., Segue Software, Inc., Softbridge, Inc., Software Quality Automation, Inc., Microsoft Corp. with Microsoft Test and about 15 other companies, analysts said.

LoadRunner is shipping now; pricing starts at $70,000.

Trinzic tackles database middleware

Tool addresses user complaints about EDA/SQL

By Melinda-Carol Ballou

Trinzic Corp. bolstered its product offerings at Database World in Chicago last week with the release of its InfoHub database access tool and updates to InfoPump data routing and Forest & Trees analysis and reporting tools.

With the release of InfoHub for client/server, Trinzic, based in Waltham, Mass., is targeting the middleware database arena owned primarily by Information Builders, Inc.'s EDA/SQL. According to Trinzic, InfoHub, in combination with Micro Decisionware, Inc.'s Database Gateway, will give users the ability to read, write, update and join data located on mainframe databases with sequential files from tools that support Microsoft Corp.'s Open Database Connectivity.

While some users have complained publicly of performance problems with EDA/SQL for transaction-intensive applications, Trinzic and Micro Decisionware officials claim InfoHub will address those problems.

Industry analysts said, however, that while it is important for developers to have alternatives to EDA/SQL in the middleware arena, it is not yet clear how InfoHub will perform. InfoHub and Micro Decisionware's gateway will provide access to Computer Associates International, Inc.'s IDMS, IBM's IMS, VSAM and DB/2 and Software AG of North America's Adabas. But EDA/SQL offers connections to a much broader range of databases, said Charles Venter, an analyst at Meta Group, Inc., a consulting firm in Stamford, Conn.

Information Builders is also expected to address some of the performance issues related to EDA/SQL's use of Focus code with the next release of EDA/SQL next spring [CW, Nov. 29].

Updates simplified

Trinzic's InfoPump 1.1 provides support for Banyan Systems, Inc.'s Vines and Digital Equipment Corp.'s Pathworks network protocols, as well as for IBM's DB/2 and Digital's Rdb relational databases. InfoPump offers server-to-server database routing, replication and synchronization, Lotus Development Corp.'s Notes and DBMS integration and host-to-server replication and downsizing, company officials said.

Users spoke of the advantages of the new version.

"We're using InfoPump to move information from traditional [mainframes] onto Lotus Notes applications," said Rodger Krammer, manager of technical systems support at publishing firm Houghton-Mifflin Co.'s Boston office, who runs InfoPump on Digital's Pathworks. "InfoPump offers the ability to update the data without having to go to extensive programming efforts ourselves."

Trinzic officials said Forest & Trees 3.1 offers improved data access, better graphics than Version 3.0 and support for Dynamic Link Libraries. It also offers a "drill-down" capability for more detail on a particular slice of a pie chart, for example. Check box and radio button support make it easier to develop more intuitive applications.

All three products ship this month. InfoHub pricing starts at $55,000, MDI Gateway pricing starts at $6,995, and pricing for the MDI Access Server, required to run the gateway, starts at $60,000. InfoPump 1.1 on an OS/2 server is priced at $25,000, and Forest & Trees 3.1 is priced at $695.

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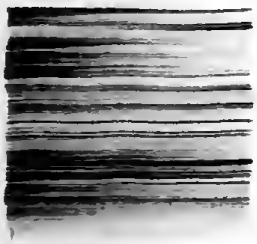

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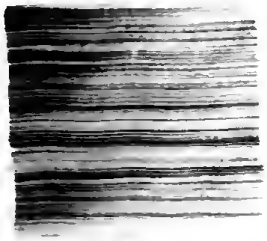

More paper coming out.
The HP Output Stacker lets you print all 2,000 pages before picking up a single document

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LOTUS APPLICATION MANAGER COLLECT & COPY DDE, OLE CONSISTENT USER INTERFACE	MICROSOFT OFFICE MANAGER DDE, OLE (2.0 IN WORD) SEMI-CONSISTENT USER INTERFACE
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A closer inspection will also demonstrate that not all of Microsoft Office's five applications are designed for general business users. And some new versions aren't yet available at all. Lotus SmartSuite, on the other hand, has five of the leading, award-winning, most usable applications. All of which truly complete the desktop of every Windows™ user.

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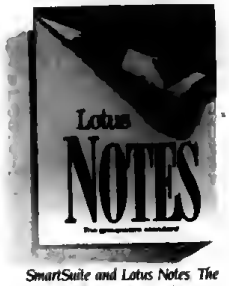

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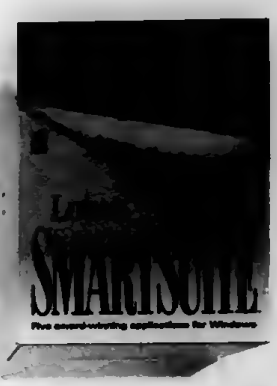

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Oberon ships builder to SunSoft users

Small software company thinks big with object-oriented tool set

By Jean S. Bozman

Oberon Software, Inc., a Cambridge, Mass., start-up financed by Toyo Information Systems in Japan, said last week that it has shipped an object-oriented application builder for SunSoft, Inc.'s Project Distributed Objects Everywhere computing environment. Oberon plans to attract commercial users with a visual programming environment that strings together existing objects.

The SynchroWorks application builder is a visual system that allows users to assemble programs by moving icons on a workstation screen. It also allows users to create new objects and store them in an Object Design, Inc. ObjectStore database repository (see story page 69).

The Oberon system, beta-tested at Kash n' Karry Food Stores, Inc. in Tampa, Fla., will replace a homegrown object environment there, said Denise Matthys, the $1.2 billion firm's systems development manager. "We wanted to get out of the tool development business so we can focus on our own business," said Matthys, who has 25 Sun Microsystems, Inc. Unix servers and hundreds of X terminals. Kash n' Karry's programmers had been using a C++ scripting language based on Internet shareware, she said.

Oberon's application builder links its built-in object database with a user's Oracle Corp. or Sybase, Inc. relational database. That means that images for multimedia applications can be stored in an ObjectStore database but mapped against data stored in a corporation's relational database, said Win Burke, Oberon's marketing vice president.

Oberon and other object-oriented tool set builders have an edge over traditional relational database firms that are wary of developing and selling their own object tool kit, said Julie Rodwin, an analyst at R. M. Fiebera Associates in Groton, Mass. "One of the conflicts [the relational database management system firms] face is how far they want to go with objects," Rodwin said. "They have an enormous installed base to protect, so the smaller companies like Oberon, Servio and Harbor Software that are coming out with object-oriented tools are going to be further ahead."

SynchroWorks supports SunSoft's Solaris 1.X and Solaris 2.3 for SPARC systems. Release 2.0, due for 1994 shipment, will support the Object Management Group's Common Object Request Broker Architecture, Burke said.

SynchroWorks applications can be built on top of C, C++, Objective C and Next Computer, Inc.'s NextStep object-oriented class library.

Support for other Unix software platforms, including Hewlett-Packard Co. and IBM RS/6000 workstations, is still being evaluated, Burke said.

Prices for SynchroWorks range from $995 for a single-user trial license to $29,000 for a four-user license and $89,000 for a 16-user license, Oberon said.

Next steps up

CONTINUED FROM PAGE 79

typical 486-based PC up to the sophisticated color, sound and video capabilities of the Next machine can add several hundred dollars.

There are psychological hurdles to clear as well. Analysts said the chances of Next's taking over this object-oriented development market are slim because Microsoft and Taligent are perceived as the real operating system powerhouses of the future.

"NextStep is as good as anything that's out there, but the move [to develop custom in-house applications] may not be as fast as Jobs likes," said David Card, director of systems research at International Data Corp. in Mountain View, Calif.

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Uniface develops portable Mac environment

By James Daly

Do your Macintosh eothusiasts feel cut off from enterprise data and applications? Or are your DOS users jealously eyeing the Macintosh ioterface?

If so, Uniface Corp. wants you to lend it an ear.

The Alameda, Calif.-based company last week unveiled an industrial-strength applicatioo development environment for the Apple Computer, Inc. Macintosh that is portable across platforms.

The Macintosh Uniface development environment enables developers hammering out clieot/server applications to build one versioo oo the Macintosh and then port it to other platforms.

For instance, applications can be ported to Windows-based PCs or character-based terminals using DOS without rewriting code, said chief architect Mark Hersey. With Uniface on Windows and Motif, the application can be deployed using the native look and feel of the Macintosh, according to Anu Shukkla, vice presideot of worldwide marketing.

Uniface is a graphical client/server environment that enables complex systems to be built quickly through the use of a central Model Repository. This approach allows applications to be easily modified or scaled to greater complexity.

Uniface also provides read/write access to major commercial database management systems, including offerings from Oracle Corp., Sybase, Inc., The ASK Group, Inc., Informix Software, Inc. and Hewlett-Packard Co.

General availability of the Uniface Macintosh development environment will be in the first quarter, with a single Macintosh development license selling for $4,400.

Uniface for the Macintosh will run on any Motorola, Inc. 68030 or 64040 Macintosh computer and requires 4M bytes of RAM, 15M bytes of available disk space and System 7.0.1.

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Briefs

Q+E licenses EDA/SQL

Q+E Software, Inc. announced that it has licensed Information Builders, Inc.'s Enterprise Data Access/SQL (EDA/SQL) offering as part of a plan to make Open Database Connectivity libraries available to Information Builders customers. Meanwhile, Borland International, Inc. announced it has licensed Q+E's libraries for its products. In other news, Information Builders announced its intention to support IBM's System/390 parallel query server with EDA/SQL.

Gemini ports to Kubota

Gemini Technology Corp. has ported its Gemini Visual System (GVS) software, a three-dimensional image-generation kit for developing real-time simulation and virtual reality applications, to Kubota Pacific Computer, Inc.'s Alpha AXP-based Kenai graphics workstations. The object-oriented GVS package was previously available on Silicon Graphics, Inc.'s systems. Gemini also signed on to resell the Kenai machines, which include Kubota's Denali graphics subsystem.

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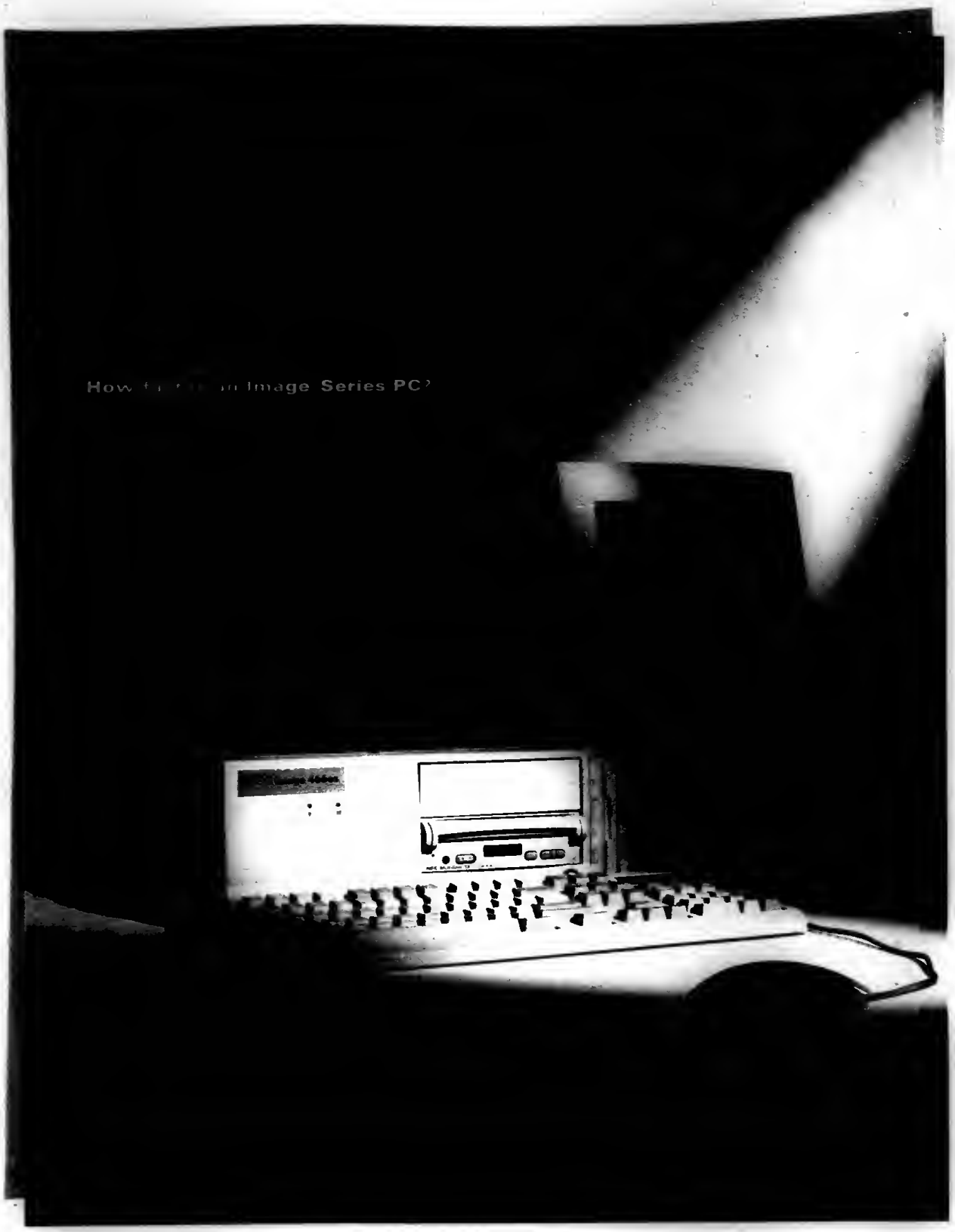
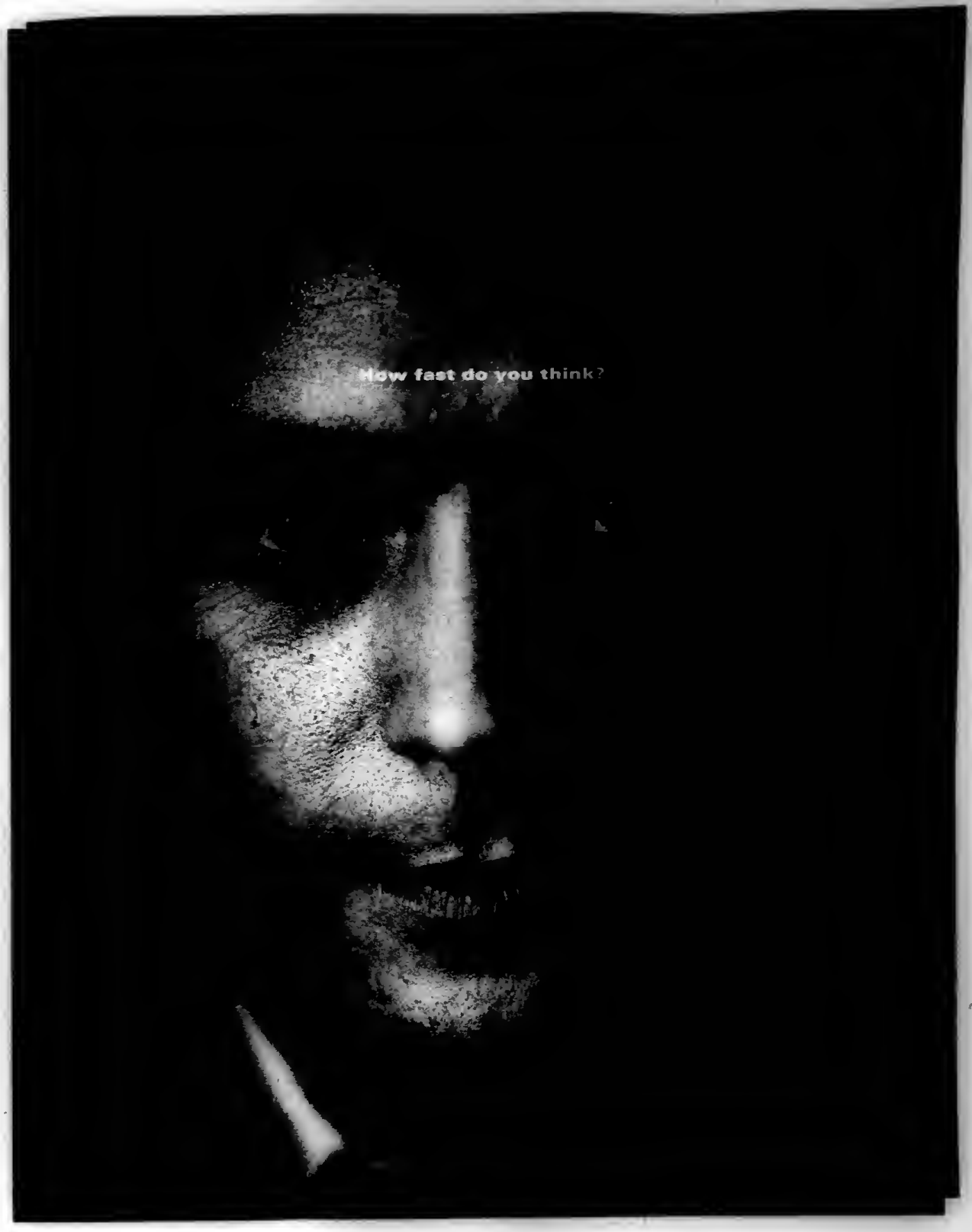

How
Image Series PC?


How fast do you think?

NEC

TeamTest 2.5 tests PowerBuilder objects

By Melinda-Carol Ballou

SQA, Inc. in Woburn, Mass., has announced a new version of its client/server testing tool that offers specialized support for Powersoft Corp. PowerBuilder's object-oriented development environment and other features.

The PowerBuilder support allows users of automated test procedures written in SQA TeamTest to "see" directly into PowerBuilder objects such as DataWindows and DropDown Windows. The contents of these objects are typically invisible to other Windows products, SQA officials said. But by using an application programming interface provided by Powersoft, SQA TeamTest determines the contents of those windows and can then run tests against user-defined criteria to determine if the contents are correct.

"While PowerBuilder is a very popular tool for developing client/server applications, one of the areas that has to be supported is regression testing," said Rich Finkelstein, president of Performance Computing, a consulting firm based in Chicago. "These kinds of capabilities are well-known and understood in the mainframe world and are only now beginning to be applied to client/server."

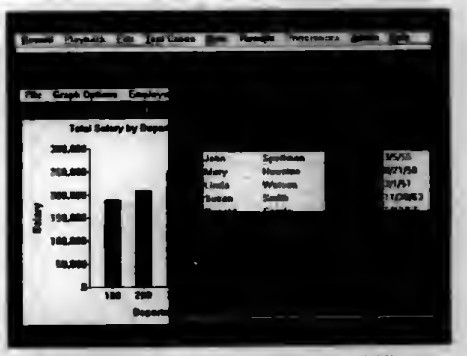
Regression testing lets developers test the consequences of modifications made to the programs on which they are working. This testing ensures that other portions of the application are working properly and have not been affected by changes made elsewhere. Finkelstein said the new version of SQA TeamTest will broaden the reach of developers by allowing them to perform tests on the contents of PowerBuilder objects.

These PowerBuilder DataWindows often contain data retrieved from a database server or data a user has entered to update a database. By testing the data values in a DataWindow, SQA TeamTest allows client-based testing of database servers in a client/server setup.

Since this specialized support does not use bitmap comparisons and operates directly on numeric and alphanumeric data, the data can be tested without regard to the visual display characteristics of the DataWindow. This offers independence from the graphical user interface design of the application.

Version 2.5 also has a text comparator, which allows rapid inspection and detection of differences in text-based test cases, and the ability to capture and test the contents of nested pull-down menus, list boxes, combo boxes, tabular spreadsheet-style controls and any Windows controls that support clipboard copy.

SQA TeamTest 2.5 is in beta testing now and is scheduled to be available during the first quarter of next year. It is priced at $1,495 per license.



SQA TeamTest 2.5 *lets developers test data 'inside' PowerBuilder DataWindows*

[redacted]

Procase Corp. has announced Version 2.1 of Smartsystem, a software development product.

According to the San Jose, Calif., company, this version of Smartsystem offers enhanced functionality, customer bug fixes and performance and usability improvements.

The product lets programmers and managers understand and fix large amounts of unfamiliar source code by graphically showing code structure.

The results provide users with information regarding errors and dependencies. The product also performs impact analysis.

It also provides a make-file reader to facilitate building a database.

Other features include code-comprehension capabilities and Call Graph capabilities that show dependencies involving global data. Function pointers are also included.

Smartsystem pricing starts at $35,000. The per-user price ranges from $5,000 to $10,000, depending on the configuration.

▶ *Procase*
(408) 433-9500

TerraLogics, Inc. has announced availability of TerraView Version 4.0, a geographic mapping software development kit.

According to the Lowell, Mass., company, TerraView 4.0 allows application developers to embed geographic maps directly into the source code of Windows applications developed with Gupta Corp.'s SQL Windows, Microsoft Corp.'s Visual C++ and C/C++ Version 7, Borland International, Inc.'s C++ 3.1 and Powersoft Corp.'s PowerBuilder.

Features include style sheets, raster data support, dynamic renditioning and faster updating of mobile symbols for real-time tracking and display applications.

TerraView 4.0 costs $4,985.

▶ *TerraLogics*
(508) 656-9900

Michaels, Ross & Cole Ltd. has introduced the Template Programming Language (TPL) in Release 4.0 of its MRC-Productivity Series, a fourth-generation language/computer-aided software engineering application development and report writing tool.

According to the Lombard, Ill., company, TPL allows users to create templates for display files and programs.

Users can specify ahead of time what code will be generated from the template because TPL uses a proprietary set of internal processing rules.

Prices range from $4,000 to $89,500.

▶ *Michaels, Ross & Cole*
(708) 916-0662

Wang Laboratories, Inc. has announced its Open/image User Objects for PowerBuilder.

According to the Lowell, Mass., company, the product allows developers using Powersoft Corp.'s PowerBuilder 3.0 to integrate powerful image document management capabilities into new or existing applications built using the PowerBuilder programming environment.

Users can add to their applications imaging functions such as displaying, scanning, manipulating, printing and faxing black-and-white, gray-scale and color images.

Open/image User Objects for PowerBuilder costs $795 for the development environment.

▶ *Wang*
(508) 459-5000

Evergreen CASE Tools, Inc. has announced EasyCASE 4.1 for Windows: Workgroup Edition.

According to the Redmond, Wash., company, the product allows multiple EasyCASE users to concurrently access a project located in a common area on a server.

The Workgroup Edition features chart and data dictionary locking at the record and file levels, a read-only mode, access control with security (passwords, serial numbers, access privileges, permissions and lockout), a user list and project export and merge capabilities.

The product works with any DOS, Windows or Novell, Inc. network that is NetBIOS-compatible.

EasyCASE 4.1 for Windows: Workgroup Edition prices start at $895.

▶ *Evergreen CASE Tools*
(206) 881-5149

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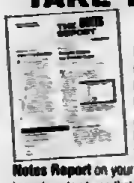

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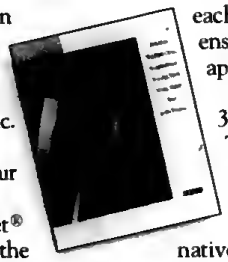

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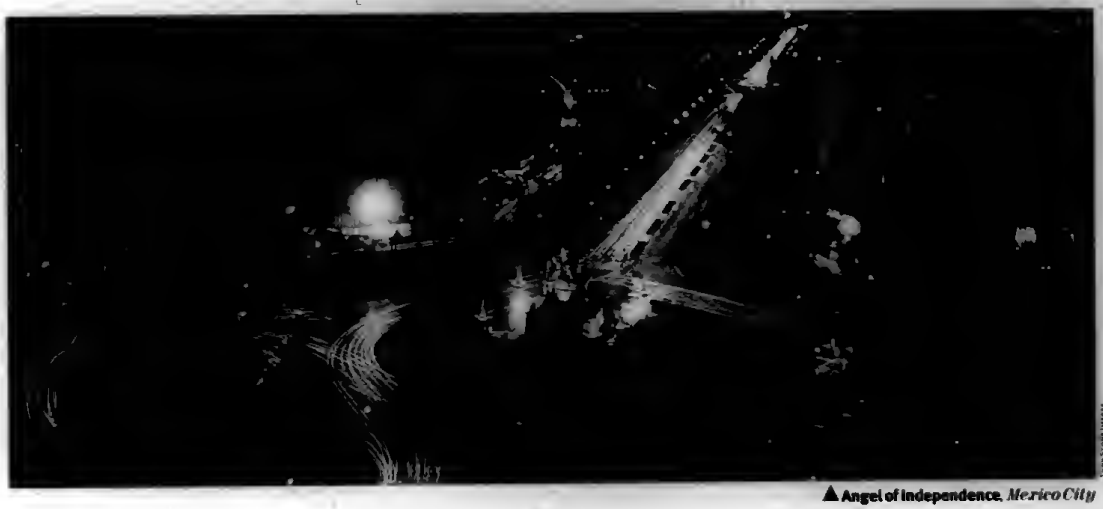
MAKING THE MEXICAN CONNECTION

NAFTA's passage means Mexico is no longer a foreign market. Get ready for the trials and tribulations — both technical and cultural — of doing business south of the border.



▲ Angel of Independence, *Mexico City*

BY MITCH BETTS

In the suburbs of Mexico City you'll find a Third World networking infrastructure: ancient, analog and unreliable. It may take three or four tries to get a connection for a business telephone call.

Less than 10 miles away, in the heart of Mexico City's commercial district, digital traffic can ride on a new fiber-optic cable that rivals or surpasses capabilities in parts of the U.S.

That is the technological paradox of modern Mexico, where restaurant tables have cellular phones so business executives can bypass the poor telephone system. Experts say U.S. companies that don't do their homework before opening facilities or negotiating joint ventures in Mexico will be in for some big surprises.

Because of high business (nonwage) costs in Mexico, McIlhenny Co. (the Louisiana-based maker of Tabasco hot sauce) has shifted all of its production from Mexico back to the U.S., while General Motors Corp. recently shifted production of the 1995 Chevrolet Cavalier from a plant in northern Mexico to Lansing, Mich.

They discovered that the country's much-ballyhooed low wages were offset by factors such as crumbling highways, decrepit railroads, bureaucratic hassles and high employee-training costs.

Nevertheless, U.S. companies will continue to open facilities in Mexico in hopes of scoring big profits from Mexico's market of 81 million people, including 24 million active consumers eager to buy U.S. products. Bobby L. Martin, former chief information officer at Wal-Mart Stores, Inc., for example, was recently promoted to head that company's new international division with the mission of tapping into the Mexican market [CW, Oct. 11].

Passage of the North American Free Trade Agreement (NAFTA) will mean even more U.S. business activity south of the border, prompted by the elimination of trade tariffs and a more favorable investment climate. Retail, medical, fast food, industrial and consumer product

NAFTA, *page 92*

NAFTA

CONTINUED FROM PAGE 91

companies are all gearing up for the Mexican gold rush.

Allergan, Inc., the Irvine, Calif.-based eye-care firm, expects its Mexican sales to double in five years, so it has struggled to set up an IBM AS/400 at its small Mexican plant, despite the lack of on-site technical help or computer expertise. The demographic trend in Mexico toward an older population means a growing market for Allergan's products and services for glaucoma and cataracts, says Mel Engle, senior vice president for Latin America and Canada.

In contrast to the newcomers, Woolworth Corp. was doing business in Mexico long before anyone dreamed of NAFTA. The retailer's Woolworth Mexicana unit has 30 department stores, plus a dozen Foot Locker stores and more specialty stores on the way, according to Philip W. Richards, vice president of corporate MIS in New York.

"Business [in Mexico] is absolutely booming. It's the most exciting market we have," he says.

Richards says the biggest headache is the antiquated state of the telephone network, which he bypasses using satellite and cellular networks.

Richards also bypasses many of the management challenges of dealing with Mexico by handling all data processing — with the obvious exception of point-of-sale terminals — remotely in the U.S. Given the economies of scale and the fading of national borders, companies such as Woolworth and Reader's Digest Association, Inc. are consolidating their North American data centers in the U.S.

Experts say NAFTA, combined with Mexico's privatization of state-run utilities, will lead to faster upgrades of Mexico's infrastructure.

The good news is that Mexico's version of Ma Bell, Telefonos de Mexico (TelMex), is modernizing with a special emphasis on the digital services that large businesses crave.

The telephone network was sorely neglected in the 1980s, making it difficult to get static-free modem connections, according to Stephen Dalla Betta, Latin America analyst at Pyramid Research, Inc. in Cambridge, Mass. As a result, multinational corporations bypassed TelMex by installing private satellite networks.

Answering the call

The ongoing transformation of the lumbering TelMex bureaucracy into a user-focused competitor began in 1990, when the Mexican government sold a 20% stake to private investors including Southwestern Bell Corp. and France Telecom. The new owners have been investing $2.5 billion a year to install digital switches and fiber-optic cables. TelMex knows it must get its act together soon because its protected monopoly position in long-haul voice and data traffic will end in 1996.

By then, TelMex expects to have achieved 88% digitalization of the network — well on its way to the goal of 100% by the year 2000. But TelMex must focus on the large urban areas and business districts first, which explains why network quality is spotty.

That also explains why General Electric Co.'s GE Information Services unit is moving its network node from the suburbs to the commercial center of Mexico City to take advantage of the new fiber-optic cable there.

In terms of network quality, says Travis Good, manager of Mexican business development at GEIS in Rockville, Md., the suburbs and downtown are like two different worlds.

Which means that life is not easy for information systems managers given the task of connecting Point A to Point B.

"I've ordered circuits [from TelMex] from Mexico City to Guadalajara and Monterrey, but they've been very late in delivery — I mean months late — and they're still incredibly expensive," reports Reuben Lantto, director of telecommunications at Minneapolis-based Cargill, Inc., which has beef processing and grain operations in Mexico.

Although the technical challenges of doing business in Mexico are considerable, Lantto and other IS managers say that bridging the cultural gap is even tougher. Frankly, it takes a while for hard-charging Americans to get used to the slow pace of business dealings in Mexico, also known as the "mañana syndrome."

STELLA PINELLO

The most obvious cultural barrier *with Mexico is language, and it's helpful for U.S. companies to have a Spanish-speaking IS staffer deal with Mexico. Software also must often be multilingual.*

Attitude adjustment

IS executives stress that the stereotype of "lazy Mexicans" is wrong — Mexican professionals work hard and long hours. But different views on the urgency of project deadlines "requires some adapting on both sides of the border," says John Rudasill, president of the computer services unit of Carolina Freight Corp. in Cherryville, N.C., which has three trucking terminals in Mexico.

"It takes an awful long time to get anything done" in Mexico, says George Bargman, telecommunications supervisor at Vulcan Materials Co. in Birmingham, Ala. Lantto agrees, saying IS managers should add one, two or even three months to any promised delivery dates.

A key factor for buyers in Mexico may

NAFTA, *page 94*

WHAT YOU SHOULD KNOW

TIPS FOR EXECUTIVES VISTING MEXICO:

- *Driving* is especially tricky in Mexico, due to poor road shoulders, rain-slick surfaces, heavy truck and bus traffic and loose livestock. Drive slower than you would in the U.S. Avoid highway bandits by not driving at night and steering clear of crime-ridden highways such as Routes 1, 15 and 40.
- *Air pollution* in Mexico City is severe and often unhealthy, especially from December to May.
- If you plan to take a *laptop computer* into Mexico, plan ahead to avoid customs problems and import taxes. Write a statement that it is for personal use, and have the statement certified at a Mexican consulate in the U.S.
- The daily cost of *meals and lodging* for a business traveler in Mexico City is $216, considerably cheaper than in Tokyo ($455), Paris ($353) or New York ($330).
- *Business etiquette*: First names are rarely used. Business hours are typically 9 a.m. to 6 or 7 p.m., with a two-hour lunch in between. Meetings, often held during breakfast or very long lunches, start with social talk to establish a trusting relationship. Mexicans are easily offended if they are addressed in a brusque manner. Family matters take precedence over business.

Sources: U.S. Department of State, Washington; Runzheimer International, Rochester, Wis.; Mexican Investment Board, New York; Kent State University, Ohio; "Mexico Business Monthly", Maplewood, N.J.

RESOURCES

American Chamber of Commerce in Mexico: (011-525) 705-0995.

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CONTINUED FROM PAGE 92

be the availability of support and maintenance services. Lantto advises: Check out references, and if you need technical support in several Mexican cities, make sure the service organization has nationwide coverage.

Of course, the most obvious cultural barrier is language. It certainly helps for U.S. companies either to have a Spanish-speaking IS staffer to deal with Mexico or to depend on outsourcing vendors that do, IS executives say.

Training on-site

One of the best project management techniques is for a Spanish-speaking IS project leader to go to Mexico for a year or two and train Mexicans in the operation, then turn it over to them, says Edward M. Roche, an expert on international IS issues at New York University.

However, it is also true that many Mexican programmers and systems analysts — those who have graduated from college or technical schools — know enough English computer jargon to get the job done. After all, Mexicans often use English versions of PC software, and most computer terminology comes from the U.S.

Consumer products maker Tambrands, Inc. requires its top managers in Mexico to speak English, but the company must ensure that the software the workers on the plant floor use is multilingual, says Diane Forrest, vice president of IS in White Plains, N.Y.

The need for multilingual software and local vendor support makes buying software for use in Mexico a bit more complex, Forrest says, especially when the company wants standard applications in both the U.S. and Mexico.

Most of the software used in Mexico is brought in from the U.S., although domestic software houses have emerged. Passage of NAFTA should bring product prices down slightly because of the elimination of import tariffs.

Business barriers

Even after overcoming the language barrier, IS managers will find that Mexicans simply have a different way of doing business, which greatly affects business processes and the information systems tied to them.

The postal system in Mexico is terrible, for example, so invoices are hand-delivered by salespeople, who also collect payment, says Laurence Noelain, vice president of Resource Evaluation, Inc.'s consulting practice in Mexico City. Furthermore, Mexican billing systems are hampered by manual processes, data-entry errors and fragmented accounting databases.

"By U.S. standards," Noelain says, "administrative operations in Mexico are prone to error and full of inefficiencies that can be a significant drain on operating profit."

For example, Noelain says, it is an accepted Mexican business practice for salespeople to negotiate discounts for particular customers orally — unbeknownst to the billing department at headquarters.

As a result, the accounting system will mislead executives about forthcoming revenue, and customers are unhappy when the discount does not show up on their bill.

IS managers report no problems finding qualified IS professionals or hardware and software products in Mexico's big cities. The Mexican government opened the computer market to foreign suppliers in March 1990, so the options for buyers have grown considerably, and competition has intensified.

Frederick W. Schroath, an expert on international business at Kent State University in Ohio, advises IS executives about to take the Mexico plunge to focus more on the future — the modern services that will be available in six or 12 months — than on current problems. "This is a country that is changing very rapidly," he says. "Looking around today is deceptive; you've got to ask people about what tomorrow will bring." ■

Betts is *Computerworld*'s national correspondent, based in Washington, D.C.

BEST BETS

The U.S. government figures these U.S. industries are the "best prospects" for making big bucks in the Mexican market:

PRODUCT CATEGORY	1992 U.S. EXPORTS*
Franchising	$3,500
Automotive parts and service	$2,530
Chemical production machinery	$559
Plastics	$455
Industrial chemicals	$393

* Estimated (in millions)

Source: American Embassy, Mexico City

NAFTA NETWORKING

The North American Free Trade Agreement provides a "bill of rights" ensuring reasonable access to the public network by business telecommunications users

- There can be no regulatory restrictions on transborder data flows or access to databases anywhere in North America.
- Users can connect private lines with other private lines or with public networks (such as for intracorporate communications).
- Pricing for private lines must be cost-based and available at a flat rate — an important point for large users that try to avoid volume- or time-sensitive rates.
- Companies can use the protocols and terminal equipment of their choice.

Source: Debevoise & Plimpton, Washington

Intelligence Files

Outsourcing to the max

Since late 1989, BP Exploration, Inc., the oil and gas exploration unit of British Petroleum, has cut its information systems staff from 1,400 workers (including 600 consultants) to 150.

The IS budget has gone from $360 million to $110 million. Most IS functions have been outsourced, including operation of BP Exploration's information technology infrastructure and application development.

Who are the survivors? Only IS professionals who fulfill one of three roles: business consultants who work with user departments and function within BP Exploration; "partner resource managers" who manage relationships with outsourcing firms; or technicians who specialize in technologies that have yet to be outsourced.

The outsourcing move follows BP's philosophy of concentrating human and capital investments on core activities and competencies, while divesting and outsourcing noncore activities.

Source: David Hall, coordinator, Information Technology Human Resource Development, BP Exploration, speaking at Retooling '93 conference, Atlanta, Dec. 2, 1993.

Academic researchers get 'brand' database

The Marketing Science Institute in Cambridge, Mass., and A. C. Nielsen in Northbrook, Ill., have formed a partnership to provide a state-of-the-art database for academic researchers.

The database, which the institute described as "unprecedented in its scope and level of detail," allows researchers to obtain realistic broad-based and long-term data.

Its purpose will be to "simulate research on assessing brand performance and to help advance the effective management of brands," according to Rudolph Struse, Nielsen Marketing Research senior vice president, who made the announcement.

Access to the database, which will become available early next year, will be overseen by the institute. Researchers wanting more information should contact Katherine Jocz, director of research management at the Marketing Science Institute, (617) 491-2060.

Source: "Review," Fall 1993, the newsletter of the Marketing Science Institute, Cambridge, Mass.

Data processing pays off for professionals

Seasoned data processing professionals can expect to reap higher financial rewards next year, according to a recent survey released by Edward Perlin Associates, a management consulting firm in New York.

The survey looked at the rates of increases in salary budgets, bonus amounts and staff turnover at 51 companies nationwide.

It included a broad spectrum of industries and found that merit budgets showed small growth in 1993 (2.8% to 6%), but salaries were augmented by large bonuses based on a percentage of base pay.

For senior managers, the average bonus in 1993 was 29% of base salary, with a range of 0% to 92% reported by respondents. Middle managers received an average bonus of 14.4%, with a range of 5% to 39% reported.

The survey also projected that starting salaries for entry-level computer programmer positions will increase by just under 2% in the coming year, bringing the average base salary from $31,500 to $32,100.

Staff turnover was also studied, with the companies reporting an average of 10.2% staff turnover in 1993 (actual rates ranged from 0% to 32%).

Source: Edward Perlin Associates, New York

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[1]1993 J.D. Power and Associates Desktop Personal Computer Satisfaction Study. Study conducted among business users in the U.S. and based on 1,956 user respondents. *Prices valid in the U.S. only. Some products and promotions are available in Canada or Mexico. [2]Business leasing arranged by Leasing Group, Inc. The Intel Inside logo is a registered trademark and i486 is a trademark of Intel Corporation. Dell disclaims proprietary interest in the marks and names of others. ©1993 Dell Computer Corporation. All rights reserved.

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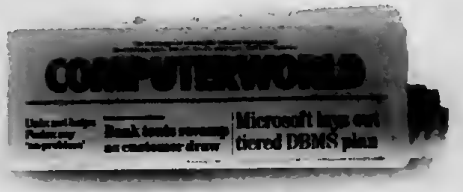

The Newspaper of IS

Executive Track

Ronald S. Bolin was recently appointed director of information services at **Polygram Manufacturing and Distribution Centers** in King's Mountain, N.C. He will report to chief financial officer Larry Brigden. Bolin will be responsible for evaluating and using The ASK Group, Inc.'s ManMan MRP2 system for the company. Prior to joining Polygram, Bolin was manager of information systems at Krauss Maffei Corp.'s U.S. headquarters in Cincinnati.

Paul J. Hoedeman, 38, has been named vice president and chief information officer of aerospace operations for the AlliedSignal Aerospace unit of **AlliedSignal, Inc.** in Morristown, N.J. Hoedeman was formerly vice president and CFO at AlliedSignal. J. Thomas Zusi, 50, replaces Hoedeman in that capacity.

Yannick Le Coudic, 46, has been named vice president of MIS at **Lubrizol Corp.**, a Cleveland-based chemical concern. Le Coudic was formerly a division head, responsible for research and development administration services.

Thomas Lewis has been named senior vice president and CIO at **USF&G Corp.**, a Baltimore-based property and casualty insurer. Lewis, 41, was most recently vice president and general manager responsible for Europe, the Middle East and Africa for object-oriented software developer Seer Technologies, Inc. in Cary, N.C. He replaces John Rohlin, who left the insurer in March.

Irene O'Donnell has joined **Keyfile Corp.** in Nashua, N.H., as vice president of administration. She will be responsible for MIS, manufacturing, purchasing, facilities and human resources. Prior to joining Keyfile, O'Donnell was co-founder and vice president of operations and treasurer of Newton Technology, Inc., a software publishing company in Newton, Mass.

Dr. Edward E. Heller Jr. has been named president of the Computerized Patient Record Institute. He has served for the past seven years as vice president of information resources at Massachusetts General Hospital in Boston, where he had strategic and operational system responsibilities for the hospital and coordinating responsibilities for other corporate entities.

Thomas R. Burch has been appointed vice president and CIO at **St. Vincent Hospitals** in Indianapolis. He was formerly vice president of operations for the hospitals.

Reporter's Notebook

Ex-CIO jokes: Several popped up at the Retooling '93 conference held recently in Atlanta. Richard W. Swanborg Jr., principal at Ernst & Young, joked about a laid-off CIO standing on a street corner with palm outstretched, asking passersby, "Brother, can you paradigm?" Chuck Gibson, vice chairman of CSC Index, recalled a conversation with another ex-CIO: "I left the same way I came in: fired with enthusiasm."

Linguistic advice: Getting management to increase training budgets is a perennial problem. One solution: Don't refer to "training fees" — talk about "tuition investments." It's a much more positive way to look at money spent on training, says Mary E. Texer, manager of technical training at the Federal Reserve Bank of Minneapolis.

Mission-critical mainframe systems: Most companies still keep the lion's share of their mission-critical systems on mainframes, judging by a show of hands at a technical session on reskilling information systems personnel. More than 75% of the audience raised their hands when Informix vice president Joseph J. Durzo asked how many kept 90% of their mission-critical systems on the mainframe.

—Compiled by Allan E. Alter

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Calendar

JAN. 9-JAN. 15

ObjectWorld. Boston, Jan. 10-13 — Program tracks include Technology of Objects, Objects in Business and Software Developer's Track. Sponsored by Object Management Group and IDG World Expo. Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

JAN. 16-JAN. 22

Client/Server Conference & Exposition. San Jose, Calif., Jan. 18-21 — Contact: CMP Conference & Exhibit Group, Manhasset, N.Y. (516) 562-7460.

Re-engineering: The Implementation Perspective. Boston, Jan. 19-21, also to be offered Feb. 9-11 — A seminar providing an introduction to the concepts and objectives of re-engineering with an analysis of the business factors driving it. Instructor will be Michael Hammer, The Center for Re-engineering Leadership in Cambridge, Mass. Contact: Hammer and Co., Cambridge, Mass. (617) 354-5555.

Storage & Interfaces '94 International Technology Conference. Santa Clara, Calif., Jan. 19-27 — Nine separate but related forums and seminars will be offered during these dates. Contact: Technology Forums, St. Peter, Minn., (507) 931-0967.

NOMDA/LANDA Emerging Technologies Expo '94. Orlando, Fla., Jan. 20-22 — Contact: National Office Machine Dealers Association/Local Area Network Dealers Association (NOMDA/LANDA), Kansas City, Mo. (816) 941-3100.

JAN. 23-JAN. 29

Demo '94. Palm Springs, Calif., Jan. 23-26 — Features new products. Contact: InfoWorld Editorial Events, San Mateo, Calif. (415) 312-0545.

ComNet '94. Washington, Jan. 24-27 — Focus will be on companywide enterprise networking issues. Sponsored by *Computerworld* and *Network World*. Contact: World Expo Corp., Framingham, Mass. (508) 879-6700.

Fourth Annual "Achieving Quality Software" Tutorial and Conference. San Diego, Jan. 26-28 — Speakers include Barry Boehm, University of Southern California, and Ron Radice, director of the Software Process Program. Contact: Vince Heald, Beck-Ellman Agency, La Mesa, Calif. (619) 469-3500.

10th International Conference on Engineering Information Systems: Product Data Management & Alternatives. Dallas, Jan. 26-28 — Contact: Management Roundtable, Boston, Mass. (617) 232-8080.

JAN. 30-FEB. 5

14th Annual Florida Educational Technology Conference. Tampa, Fla., Jan. 31-Feb. 4 — Contact: Bureau of Educational Technology/Florida Education Center, Tallahassee, Fla. (904) 488-0980.

Executive Technology Summit '94. Sponsored by The Society for Information Management and *Computerworld*. Tarpon Springs, Fla., Feb. 2-4 — Contact: ATI Travel Management, Chicago, Ill. (312) 644-6642.

FEB. 6-FEB. 12

Building Enterprise Architectures. Washington, Feb. 8-10 — Contact: Technology Transfer Institute, Santa Monica, Calif. (310) 394-8305.

FEB. 13-FEB. 19

Sigda: Workshop on Field Programming Gate Arrays. Berkeley, Calif., Feb. 14-15 — Contact: Association for Computing Machinery, New York, N.Y. (212) 944-1318.

The Sixth Annual Software Support Conference. San Francisco, Feb. 14-16 — Contact: Jan Rosenthal, Institute for International Research, New York, N.Y. (212) 661-3500.

Mobile World. Dallas, Feb. 15-17 — Contact: Digital Consulting, Inc., Andover, Mass. (508) 470-3880.

Networks Expo '94. Boston, Feb. 15-17 — Contact: Bruno Blenheim, Inc., Fort Lee, N.J. (201) 346-1400.

Distribution/Computer Expo '94. West Irvine, Calif., Feb. 16-17 — Contact: C.S. Report, Uwchland, Pa. (215) 458-6410.

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GROUPWARE

FOR SOME, IT'S SIMPLY A GOOD WAY TO GET A CONFERENCE ROOM. FOR OTHERS, IT'S AN ENTREE TO STREAMLINING THE BUSINESS.

BY ALAN RADDING

Groupware is big, no arguing with that. But it's hard to tell how much of its popularity is due to the fact that just about *anything* can fall under this category.

The term is being applied to everything from project management software to multiuser databases to remote access tools to document imaging software.

Current definitions of groupware don't give information systems managers much guidance. One early definition called it "a co-evolving human tool system" — whatever that means.

The Groupware Users and Vendors Association in San Francisco identifies approximately 200 vendors that provide groupware products and services ranging from basic electronic-mail packages to integrated applications such as Notes from Lotus Development Corp.

Even if vendors and analysts can't agree on a precise definition, an outline of the functionality required for group collaboration is emerging. It includes:

- Messaging with intelligent filtering and routing capabilities (page 103).
- Scheduling (page 105).
- Conferencing (page 103).
- Collaborative software that combines a number of groupware functions (page 106).

A forms capability is also emerging as a hot new feature. Sophisticated E-mail-based forms can replace traditional forms, such as expense reimbursement and purchase order paperwork; they can also take over the task of routing the forms to the appropriate people.

More importantly, today's forms incorporate an underlying logic that allows them to process the form or serve as the input device to a database. For instance, when salespeople fill out a form, they're also entering data into a database because of the SQL logic underlying the form.

The future of groupware will likely see the blending of the above categories.

Despite the emergence in the past 18 months of numerous groupware- and work-flow-oriented packages, few organizations are actually using them in production mode, says Michael Bragen, a software industry analyst in Lexington, Mass. As a result, the known needs of the market at this point are limited.

Radding is a free-lance writer in Newton, Mass.

Notes and companions
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Buyers' Scorecard:
Project management software
PAGE 110

Firing Line:
Futurus Team
PAGE 112

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HOW MUCH GROUPWARE IS ENOUGH?

It started innocently enough with senior executives checking messages and mail from the road, including scanned copies of paper mail. Before long, any document for any project pursued at Harmon Contract, Inc. was stored in a Notes database, be it a permit, a waiver, a materials list or a subcontractor schedule.

But Harmon, a large construction firm in Minneapolis, really got serious about Lotus Development Corp.'s Notes groupware product when it acquired five small companies and tied them together with $400,000 worth of PC LANs, Notes and Lotus' SmartSuite group of personal productivity products.

The clincher was when the newly enlarged Harmon won its first bid, a $6 million project, in large part because even the customer could send messages and check on documents by accessing Harmon's Notes database.

For companies such as Harmon, a single groupware application can blossom into a way of streamlining business processes cheaply or at least without paying a Big 6 firm tens of thousands of bucks.

"Notes applies itself well to what people see as the problems holding back the business," says Robert Larson-Hughes, formerly information systems director at Harmon, now a principal at Notes consulting firm Larson-Hughes & Associates.

In fewer cases, groupware is single-purpose. "We had a crying need to schedule facilities," reports Bill Sims, director of operations for the Miami Project to Cure Paralysis at the University of Miami School of Medicine. The group adopted Network Scheduler from PowerCore, Inc., but users have resisted other groupware.

"People see it as more bells and whistles that we don't need," Sims says.

For those of you trying to stay ahead of the groupware curve, the lesson is: First get a feel for how far people want to take this phenomenon and then buy products that match a specific need.

That's not easy to do because groupware tends to take on a life of its own once implemented. Users who first want conferencing or scheduling tend to eventually outgrow those systems. So if you start with "just a little," you might be sorry before long.

Success lies in not getting "stuck" with a product that can't expand. That means considering whether any single-function product you purchase will be able to merge with other groupware or whether it has additional modules.

With multifunctional products, be sure they're open enough to integrate with the enterprise or other existing personal productivity applications.

E-MAIL

THE ORIGINAL GROUPWARE

WorkGroup Technologies, Inc.

Electronic mail is a given in any groupware system — but not just E-mail in the messaging sense.

Today's E-mail has to have smarts. Not only does it have to deliver messages, but it should also distribute and route them based on subject matter. An urgent late-night message to the help desk from a high-level executive can automatically trigger a beeper call to a support technician. Or a sales order form for a new customer can trigger a request to an outside service for a credit report.

When New England Medical Center in Boston first experienced Beyond, Inc.'s BeyondMail almost two years ago, "we got all kinds of ideas for intelligent messaging like tying in beepers and faxes," says Sarah McGillowey, support manager. For example, the system might page a doctor based on lab test results that arrive at the doctor's E-mail mailbox.

But even intelligence in E-mail is becoming less of a differentiating factor since most mainstream products now have rules and filtering capabilities. Companies such as Futurus Corp. in Atlanta, which makes Futurus Team, are scrambling to stay ahead by layering other functions on top of E-mail, such as scheduling and conferencing. Microsoft Corp., Lotus Development Corp. and WordPerfect Corp. are adding forms capabilities to their basic E-mail packages.

In fact, by the end of the decade, "E-mail and scheduling products will actually be part of the workgroup infrastructure," says Bob Flanagan, a senior analyst at WorkGroup Technologies, Inc. in Hampton, N.H. "They'll become utilities and services that are required by end users."

Pictured is BeyondMail

E-MAIL PRODUCTS

CC:MAIL, LOTUS DEVELOPMENT CORP., CAMBRIDGE, MASS.
MAIL, MICROSOFT CORP., REDMOND, WASH.
BEYONDMAIL, BEYOND, INC., CAMBRIDGE, MASS.
COORDINATOR, DA VINCI SYSTEMS CORP., RALEIGH, N.C.
TEAM, FUTURUS CORP., ATLANTA, GA.
HIGGINS, ENABLE SOFTWARE CORP., BALLSTON LAKE, N.Y.

CONFERENCING

STILL IN DEVELOPMENT

WorkGroup Technologies, Inc.

Conferencing software won't be fully realized until desktop videoconferencing becomes practical — sometime around 1997, says Matt Cain, program director at Meta Group, Inc. in Westport, Conn.

Today, real-time, full-motion videoconferencing takes up too much bandwidth and requires too much high-end hardware, making it very expensive.

Until then, users are making do with other forms of electronic conferencing software: electronic meeting support, shared screens, "whiteboards" (a shared common screen), on-line chat services and electronic bulletin boards.

Shared-screen products allow geographically dispersed users to view the same on-screen information in real time. Participants use on-screen pointers and pen tools to point to screen items. The meeting organizer controls what appears on the screen and can also structure the meetings by allowing, for example, participants to rank various options and then display the results.

Whiteboard products, on the other hand, typically are used for brainstorming sessions. Meeting participants are usually present, although videoconferencing is being added to some products. Each user has a PC from which he can project his ideas onto a screen. Some systems provide a structured format that allows users to prioritize ideas or vote, rank or otherwise quantify group preferences.

When choosing a conferencing product, consider who controls the screen, the interaction rate, whether interaction is in real-time, platform support and wide-area network support, says David Coleman, chairman of GroupWare '94 and the Groupware Users and Vendors Association.

Pictured is SunSoft's Show Me

OTHER CONFERENCING PRODUCTS

VISIONQUEST, COLLABORATIVE TECHNOLOGIES CORP., AUSTIN, TEXAS
MEETING ROOM, EDEN SYSTEMS CORP., INDIANAPOLIS
DESKTOP CONFERENCING, FUJITSU NETWORKS INDUSTRY, INC., STAMFORD, CONN
ASPECT (FOR THE MAC), GROUP TECHNOLOGIES, INC., ARLINGTON, VA.
TELECONFERENCING SOFTWARE SYSTEM, PICTURETEL CORP., DANVERS, MASS.
SHOW ME, SUNSOFT, INC., A DIVISION OF SUN MICROSYSTEMS, INC., MOUNTAIN VIEW, CALIF.
TEAMTALK, TRAX SOFTWORKS, INC., CULVER CITY, CALIF.
GROUP SYSTEMS V, VENTANA CORP., TUCSON, ARIZ.
TEAMFOCUS, IBM, ENDICOTT, N.Y.
TIMBUKTU, FARALLON COMPUTING, INC., ALAMEDA, CALIF.
LIVEBOARD, GROUP COMMUNICATIONS (XEROX CORP.), PALO ALTO, CALIF.

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SCHEDULING

BIGGEST BANG FOR THE BUCK

WorkGroup Technologies, Inc.

Organizations that want an immediate return on investment turn to scheduling products first. Scheduling and calendaring systems do such things as:

- Keep track of users' individual calendars.
- Overlay those calendars to find free time for meetings.
- Notify users of meetings.
- Provide for automatic RSVP.
- Send reminders as meetings draw near.

"When the network goes down, the thing people scream for most is the scheduler," says Chuck Brown, technical services administrator for the city of Savannah, Ga. The city uses Campbell Services, Inc.'s On Time, a network-based scheduler that runs on its Banyan Systems, Inc. Vines network.

Initially, On Time was considered only for top managers, "but it quickly expanded to everybody," Brown says.

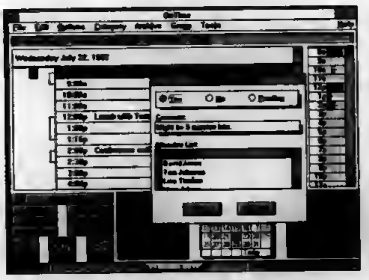
Similarly, Cambridge Neuroscience, Inc., a biotechnology firm in Cambridge, Mass., adopted Meeting Maker from On Technology, Inc., also in Cambridge, when it experienced "a lot of meeting room conflict," recalls Mark Schnegg, information systems manager.

The company tried to solve the problem using its electronic-mail system, but that only reduced the effort required to inform people about a meeting. It did nothing to automate the coordination of schedules and allocation of resources such as conference rooms.

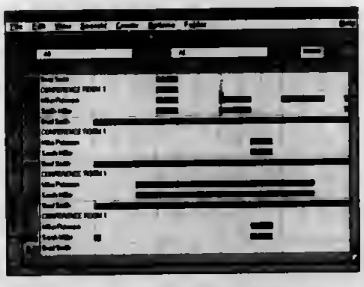
The firm selected Meeting Maker because it supports both Macintosh and PC users. Management was initially skeptical, Schnegg concedes, but today 100 users faithfully coordinate their schedules through Meeting Maker.

The current crop of schedulers, however, often come up short in areas such as support for central directories, resource scheduling (as opposed to people scheduling), automatic reconciliation for remote users and adjusting for time zones.

"We would really like an on-line address book and automatic reconciliation," Brown says. While scheduling resources, such as conference rooms or video equipment, seems a natural, not all systems provide it.



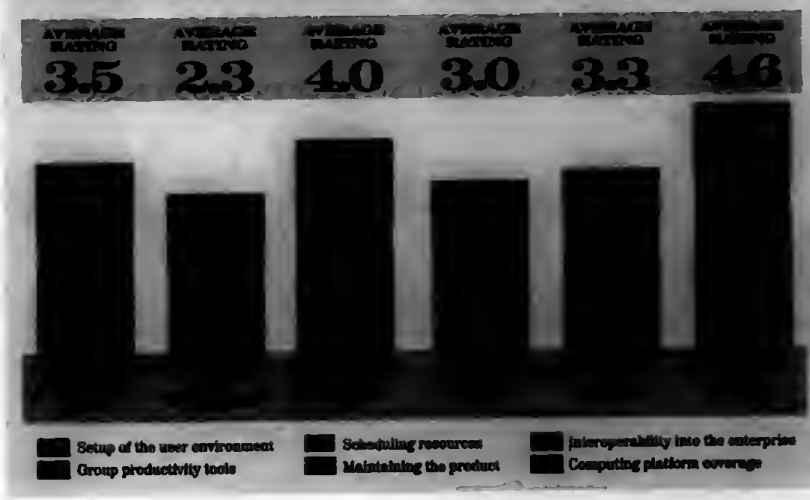
Campbell Services' On Time differentiates itself by using real-time message delivery rather than a store-and-forward approach



PowerCore, Inc.'s Network Scheduler offers Windows, Macintosh and Notes add-on versions of its scheduling system

RATING THE SCHEDULERS

THE FOLLOWING RATINGS WERE PROVIDED BY BOB RUSTICI, AN INDEPENDENT CONSULTANT DOING RESEARCH FOR AN UPCOMING PUBLICATION FOR THE PATRICIA SEYBOLD GROUP IN BOSTON. THE STUDY CONCENTRATES ON IMPLEMENTING CALENDARING ON A ENTERPRISEWIDE BASIS.



BEFORE YOU BUY

It has yet to be determined just what more need in groupware- and work-flow-oriented packages. Here's a preliminary idea of what to look for when choosing a system:

PLATFORM SUPPORT. Packages should operate on the broadest possible array of operating systems, networks, mail systems, databases and equipment.

Compatibility with mainframe and midrange database management system formats is emerging as a requirement, particularly if the systems are to be considered scalable to enterprisewide use. A few of the systems on the market can read and write to SQL database formats.

Support for key network operating systems is fairly ubiquitous. Operating system and hardware platform support is not as advanced. It is still important to investigate vendor claims of multiplatform compatibility for Unix, OS/2 and the Macintosh.

EASE OF USE. Graphical user interfaces have come a long way toward making groupware easier to use. However, tool kits can require substantial training, particularly on the wide-area network design end.

PRICING. Mail-enabled applications tend to be priced below high-end groupware solutions such as Notes from Lotus Development Corp. High-end systems are in the $200-per-seat range, while single-function products cost less than $100 per seat. Recent pricing strategy changes among vendors (notably Lotus with Notes) and competitiveness among software makers has contributed to lower price points across the board.

SCALABILITY. No product selling itself groupware can be limited to a small number of users and still be considered scalable. But this is more a function of compatibility with [illegible] system than the software itself.

The key to routing efficiently over the network through the mail system is having an [illegible] means of shipping data. For example, systems [illegible] large image files or require substantial [illegible] cation of large databases drag down overall [illegible] formance. While this might work with a [illegible] users, it is likely to keel over under its own (messaging) weight with 1,000 users.

MODULARITY. Lotus has done well in marketing the concept of "modular functionality" with Notes. Other products are [illegible] vanced in this department. Since there is no common "groupware application programming interface" or work-flow standard in the industry, the lowest common denominator is the SDBMS, which has been historically difficult to integrate.

Written by Michael A. Brogan, a software industry analyst in Lexington, Mass.

THE FOUR MUSKETEERS

SOME PRODUCTS DEFY CATEGORIZATION ALTOGETHER. THE FOLLOWING VENDORS ALL OFFER E-MAIL AND THE ABILITY TO COLLABORATE ON APPLICATIONS. FROM THERE, THEY DIVERGE DRASTICALLY ON THEIR APPROACHES TO GROUPWARE.

LOTUS NOTES

LOTUS DEVELOPMENT CORP.

Notes was developed from a store-and-forward document database perspective. Its "notebook page" or "document" metaphor works exceptionally well for storing, viewing, manipulating and collaborating on documents.

• **Data types handled:** Lotus, like Oracle Corp., has recognized that "documents" can include graphics, audio and video. With Eastman Kodak Co., Lotus supports photos through its Document Imaging facility. Notes 4.0, due out next year, will support videoconferencing with PictureTel Corp.

• **SQL access:** Lotus' DataLens product enables access to SQL databases. Vendors such as Gupta Technologies, Inc. and Powersoft Corp. provide Notes interfaces.

• **Third-party relationships:** Many firms, such as Digital, have established technical relationships with Lotus, and many products are integrated with Notes or can pull data from Notes.

• **Training:** Of the products examined here, Notes is probably the most complex.

• **Application development:** Notes offers the most comprehensive application development environment of the four products.

• **Work flow:** An application programming interface (API) brings in third-party tools such as Action Technology, Inc.'s work-flow tools and Reach Corp.'s Workman for more complex, process-oriented applications.

DIGITAL LINKWORKS

DIGITAL EQUIPMENT CORP.

LinkWorks was developed from an object-oriented perspective. It is the only product of the four that is not an application; it is a framework that supports transparent group-enabling of personal and shared applications. It does not require you to change the way you work or the applications you use. Instead, it group-enables applications through encapsulation and by separating data and programs.

• **Available functions:** Electronic routing (serial, parallel and conditional), electronic signatures, versioning.

• **Data types handled:** LinkWorks easily integrates structured and unstructured data, which can be managed from a central point.

• **SQL access:** Can access Oracle, The ASK Group, Inc.'s Ingres, Digital's own Rdb and Informix Corp. relational databases.

• **Security:** LinkWorks provides a highly specific security system that lets an administrator isolate

databases and desktops. It has more of a top-down central management focus, whereas Notes has a more bottom-up and client-centric approach.

• **Routing capabilities:** Routing is less formalized than Notes. Users can develop their own work flows and routing processes by using a graphical user interface. Users point to the person and order in which the document will flow by identifying recipients on an on-screen organizational chart.

WORDPERFECT OFFICE

WORDPERFECT CORP.

WordPerfect Office's roots are in messaging. The product competes more directly with Oracle Office and is complementary to Notes. WordPerfect is working on a Notes gateway to WP Office.

• **Available functions:** Office supports electronic mail, scheduling/calendaring, simple work-flow forms and document routing with full-status tracking. WordPerfect's purchase of SoftSolutions, Inc. will allow WordPerfect to integrate SoftSolutions' document management software into Office. Office will then store long-term messages to be available for full-text search and retrieval.

• **Security:** As a client-oriented messaging system, Office implements security at the mailbox level through encryption of stored and

transported messages.

• **Work-flow capabilities:** Simple forms routing provided via E-mail.

• **Application development:** WP Office does not store documents or have direct database access, nor is it a development environment like Notes. Developers can access WP Office functions through APIs.

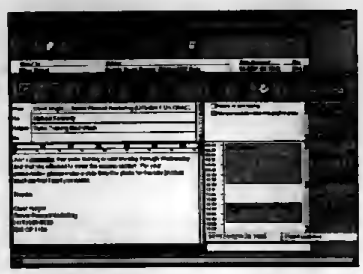
ORACLE OFFICE

ORACLE CORP.

Oracle Office was developed from a transaction-based relational database perspective. Being database-oriented, Oracle Corp. tends to favor the server side of client/server, as opposed to Lotus, which favors power on the client.

• **Available functions:** Office includes electronic mail/messaging, calendaring/scheduling, advanced directory services and integrated proofreading. Oracle is adding intelligent document manipulation and collaboration functionality. Document management capabilities will appear in 1994. This new layer will offer subject- and concept-oriented search and retrieval, version control and other functionality needed to collaborate around documents.

• **Application development:** It is



built on the Oracle database, a robust development environment.

• **SQL access:** Office accesses Oracle data as well as all other relational databases via gateways.

Written by David Coleman, conference chairman of GroupWare '94. His Internet address is davidc121@aol.com.

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BEHIND THE SCENES WITH RAY OZZIE

CREATOR

Everybody's on the groupware bandwagon now. Time was, Lotus Development Corp.'s Notes had the whole wagoo to itself. Its timing had a lot to do with the vision of one Ray Ozzie, who started thinking about groupware when he was a computer science major at the University of Illinois.

Ozzie was struck by the school's host-based educational system, Plato, which included both a central bulletin board-style repository and an electronic-mail system. Students and faculty used the system to communicate and work with people all over the country. Ozzie became determined to recreate that type of environment on the PC platform.

Through a mutual friend, Ozzie met Mitch Kapor, founder of Lotus. He struck a deal that allowed him to spin off a company in 1984 to begin work oo Notes. Ozzie is now president of that spin-off, Iris Associates in Westford, Mass. The 45-employee company handles the development of Notes, while Lotus handles marketing and sales.

"Groupware" is a fuzzy term. How do you define it?

"I use it to mean any kind of software that lets people share things or track things with other people. Calendaring software and E-mail are groupware by my definition. A mail-enabled spreadsheet is not, because that's not the core purpose of the application."

How do you translate that broad idea of "working together" into a product design?

"There are two basic models of collaboration: sending things to other people and sharing things among people. Sending is like the mail model; sharing is more like the central data model where people go to look for things in a central place.

"In order to build collaborative applications, you need both. Many of the interesting applications people want can't be built on a mail base. Similarly, you can't build it all on a sharing model. In work flow, you want to route something from person to person to person instead of having to go get it from somewhere."

Your competitors don't necessarily agree with that vision. Borland International, Inc. is working to create workgroup versions of their applications that will communicate by mail, instead of releasing a separate groupware product.

"In Borland's case, they've chosen to build groupware functionality on a mail substrate, not on a database. While there are many useful things you can do sharing things with mail, it simply doesn't scale to real-world applications once the group gets above the two- to three-people size."

What about Microsoft Corp.'s approach to groupware?

"Microsoft has a multitiered strategy. On the operating systems side, I'm sure that Microsoft's Cairo will have a nice object store. But it's going to be in one operating system, which will be a subset of the operating system that people use in real life.

"One of the compelling things about Notes is that the entire database system is on both the server and the client. You can use it 'disconnected' — off the network — just as easily as when you are on the LAN. But Windows NT takes 32M bytes of memory to run the object store.... You aren't going to be able to put that on your laptop."

Where is groupware technology headed in the near future?

"One of the interesting things that has developed is people nsing groupware for interenterprise commuo ications. More and more customers are beginning to work with partners, suppliers, etc. who also happen to be using Notes. Because of the security model, it's easy to connect their systems together and still retaio security. In the future, the interenterprise componeot will be much more important.

"Another very important thing is integration with other desktop applications. Technologies such as OLE [Object Linking and Embedding] establish a great base on which we can build to integrate Notes with spreadsheets, word processors, etc. Groupware can be the container for those applications and take care of getting the information to the place where it needs to be. We can add value to other applications even though they aren't Notes apps."

DON'T EVEN TRY TO PITCH IT AS 'GROUPWARE'

USER

JOE WEBER'S' FIRST ATTEMPT AT BRINGING GROUPWARE INTO HIS COMPANY FAILED TO THRILL USERS. BUT WHEN HE SOLD IT AS A WAY FOR MANUFACTURING TO KEEP UP PROCEDURE AND SAFETY MANUALS, USERS WERE HOOKED.

Written by Paul Karon, a free-lance writer in Los Angeles.

Earlier this year, it was time again for Joe Weber to face a recurring data management issue: document management for workgroups at manufacturing sites.

In the past, the Fortune 500 East Coast chemical corporation where Weber works had attacked the problem with mainframe-based, full-text search/document management software. Those systems are fast, but they are also costly to develop and maintain.

So Weber, an information resources specialist, and his colleagues decided to leverage the graphical PC operating systems — OS/2 and Windows — that had spread through the firm. He put a box of Lotus Development Corp.'s Notes nnder his arm and went out to talk with some of his users.

"Look, groupware!" Weber said.

"That's nice," the users said. "Go away."

Weber changed his strategy. "Instead of trying to sell 'gronpware,' we're now trying to sell specific applications that happen to be groupware applications," he says.

One of the first applications, developed in consultation with the company's manufacturing sites, was a document management system that gave all tbe necessary people easy access to a constantly changing set of procedure manuals and safety documents.

Though faster and less expensive than developing mainframe applications, sculpting applications out of the Notes programming language was still a challenge, Weber says. "Some of the sample applications in Notes gave us some ideas, but they didn't work for ns until we did some major tweaking," he says.

But in terms of user acceptance and savings in development costs, Weber says the Notes environment "exceeded our expectations." About half of the target users spend almost all of their computer time in the Notes environment.

What's on Weber's wish list? A run-time Notes module would be a real boon. "I don't want to have to spend 400 bucks for a full package to be used by a technician in a lab who will never develop a Notes application," he says.

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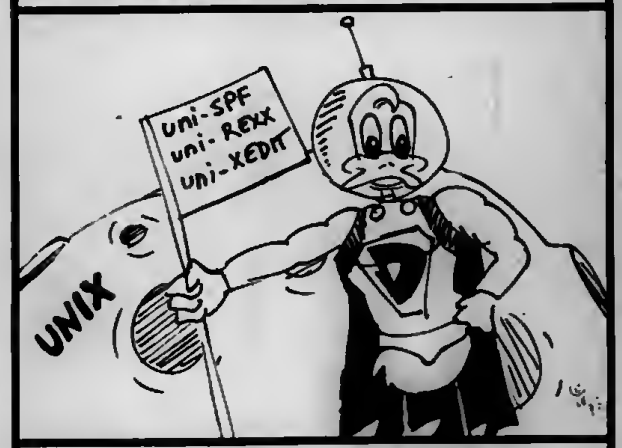

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BUYERS SATISFACTION SCORECARD

Integration garners high ratings for Microsoft Project for Windows

By Kevin Burden

Before the hype surrounding groupware packages focused the spotlight of interest on the habits of workgroups, groups of workers were communicating and coordinating projects through project management software.

Project management packages typically have been powerful applications with equally high-powered prices. They were notoriously complex and extremely difficult to learn. In the case of some high-end packages, this still holds true.

But low-end Windows-based packages are broadening accessibility to project applications. The graphical user interface has brought a level of intuitive ease of use and substantially reduced the learning curve.

In the Buyers' Satisfaction Scorecard, users of the two leading Windows-based packages, Microsoft Corp.'s Project for Windows and Symantec Corp.'s Time Line, rated their satisfaction with the software's key abilities.

Although the market-leading Microsoft Project scored the highest in 13 of the 20 categories, Time Line's scores were very close, which explains why Symantec calls Time Line "No. 2 with a bullet."

Split decision

Microsoft Project scored very high in overall reliability and its ability to interface with other applications. But it scored low in price and ability to transfer information to multiple platforms.

Time Line also excelled in reliability, and users said they were very satisfied with the package's ease of use. Time Line received low marks for its database functions and its ability to perform what-if scenarios.

Microsoft Project incorporates both Dynamic Data Exchange and Object Linking and Embedding, which helped it with its high integration rating. These features allow users of Project to effectively interface to external applications and create custom solutions.

Time Line's spreadsheet-like interface and outline structure give the screen a familiar look and, hence, a high ease-of-use rating. Time Line also incorporates a technology called Co-Pilot that monitors a user's actions and makes suggestions along the way.

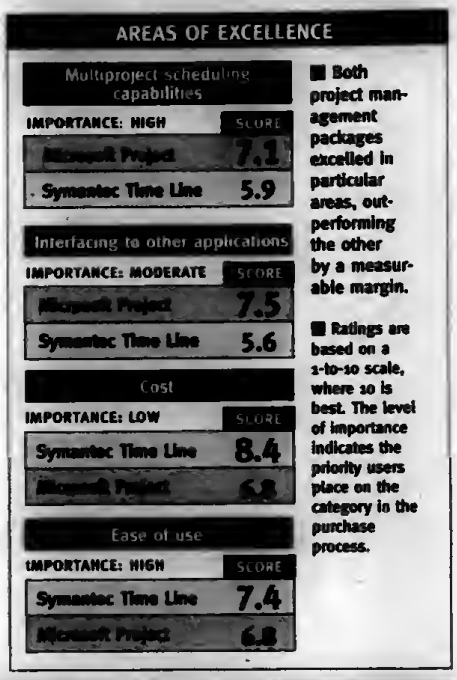
The most popular high-end project managers are Primavera Systems, Inc.'s Project Planner, Welcom Software Technology's Open Plan, Lucas Management Systems' Artemis Prestige and Project Software & Development, Inc.'s Project/2 Series X.

Levels of difficulty

These packages were designed to handle many levels of complexity, which is why there are different levels of project management software. High-level, mission-critical projects require an equally involved, function-packed application to manage many resources.

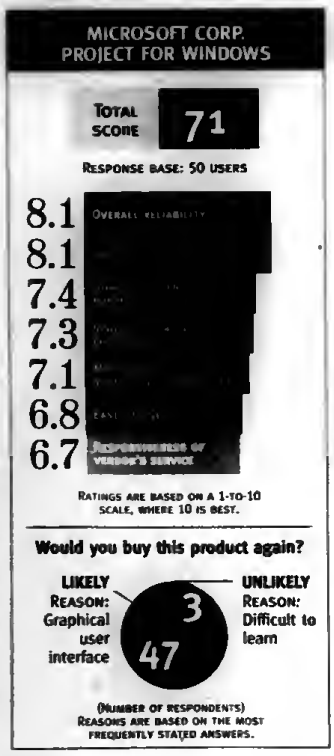
The prices of these packages are all in the $1,500-and-up range per single user, compared with less than $700 for a low-end application. Obviously, high-end packages are intended for the skilled project stakeholder, not the novice computer user.

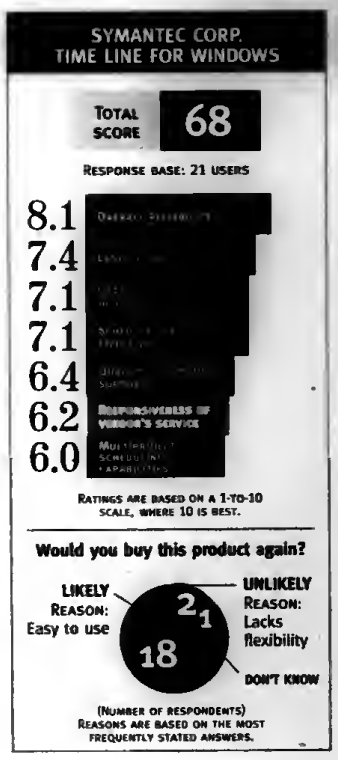
Buyers' Satisfaction Scorecard is a user survey of market-leading products conducted and tabulated by First Market Research Corp. in Austin, Texas. For a complete methodology, contact Kevin Burden at (800) 343-6474, Ext. 717. ■



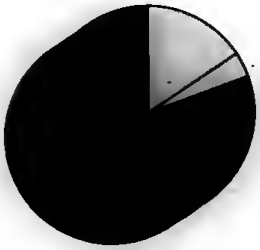
■ Both project management packages excelled in particular areas, outperforming the other by a measurable margin.

■ Ratings are based on a 1-to-10 scale, where 10 is best. The level of importance indicates the priority users place on the category in the purchase process.





Why is Compuware the company so many turn to for programming productivity tools?



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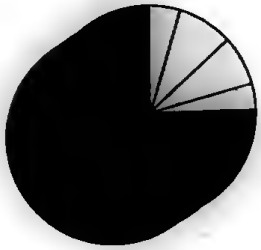

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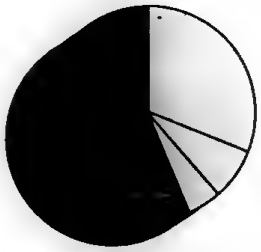

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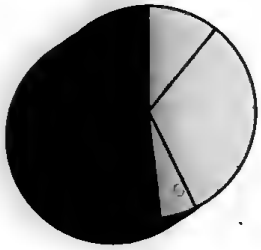

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Futurus Team Combo:
No frill, low-cost groupware basics

Futurus Team Combo 3.0

Computerworld's Firing Line is an evaluation based on interviews with major users at corporate and educational installations. The product under evaluation is being used in live application environments.

■ Evaluators said Futurus Corp.'s 3-year-old Futurus Team Combo provided basic electronic mail, scheduling and databases at a very low price.

■ They expressed concerns that new versions of the software were being released prematurely and without adequate technical support.

The meat and potatoes requirements of groupware traditionally meet the simple purposes of electronic mail, scheduling and some database functionality.

Enter Futurus Team Combo, a straightforward implementation of the groupware concept that has been available in several versions since 1987.

A sparse yet easy-to-use groupware package, Futorus Team, from Atlanta-based Futurus, includes all of the essential components of groupware. Version 3.0 of Futurus Team, announced in August, includes a few maintenance and printing enhancements but does not significantly add to the basic functionality of embedded E-mail, scheduling and databases.

The evaluators participating in this survey included technical and management personnel from a regional food distributor, a manufacturer, a global electronics firm and a metal products company. Average use of Futurus Team was approximately three years.

All evaluators worked with Windows and DOS versions of the client software, as well as recent upgrades to Futurus Team Version 3.0.

The evaluators collectively oversaw more than 1,000 client installations of the groupware. The electronic and manufacturing firms had regional and global links to off-site Futurus Team servers.

The format for this evaluation was created with the help of Howard Rubin Associates and Technology Investment Strategies Corp.

Installation

The evaluators said initial installation and upgrades of Futurus Team went smoothly and usually took less than one hour. Upon installation, the program reads the Novell, Inc. NetWare bindery and adds users and network addresses to its own user list. Additional modules that add Message Handling Service (MHS) and wide-area network services made installation more complex.

Food distributor: "It directly read our existing Novell users."

Electronics: "The documentation doesn't go into sophisticated setups using MHS and WAN modules. MHS was painful."

Reliability

Failures were infrequent with the DOS versions of Futurus Team, although more than one evaluator complained about the integrity of the newer Windows software.

Manufacturer: "There is little to nothing wrong with the software."

Metal products: "They gave me four [Windows] fixes, two of which were inoperable."

Performance

Evaluators were less than content with software performance and expressed a desire for faster printing of Futurus mail and faxes.

Food distributor: "They have been improving printing, but the rest of the functions are immediate."

Security

Futurus Team uses MS-DOS and Novell security capabilities to protect messages and files. For three of the evaluators, that was sufficient for security purposes.

Food distributor: "Some executives are hesitant to use [Futurus Team] because the mail is not encrypted."

Electronics: "A technically aware person could break the security, which is based on Novell NetWare."

Technical support

Evaluators said support from Futurus was not generally required. However, they rated the company slightly less than average because of bugs in the newer Windows software.

Manufacturer: "They have been good with support calls, but they are never proactive about [informing customers of] bugs."

Ease of use

Training new users on Futurus Team was a snap, the evaluators said. Training ranged from a simple instructional handout to one hour of hands-on coaching.

Manufacturer: "We provide a one-hour training class on an ongoing basis."

Electronics: "If you know Windows, it's self-evident."

Maintenance

Futurus Team required little maintenance. The evaluators reported maintenance times of about one hour to two days per week. They did say they wanted an easier method to rid the system of old and archived mail.

Metal products: "They haven't provided good utilities to remove built-up data."

Price

The evaluators were in agreement that Futurus Team was one of the less expensive E-mail and scheduling packages available on a per-seat basis. They reported initial expenses of $35 to $65 per user and upgrade costs averaging $10 per seat.

Value

Even the harshest critic of bugs in the new Futurus Team software for Windows said the program was an excellent value.

Manufacturer: "Considering what it cost, the value is astronomical."

Written by Computerworld *senior editor Garry Ray.*

Futurus responds

▶ **Technical problems:** Upgrades will be less frequent, as Team is now a more stable Windows product. This will result in fewer client disruptions and expense.

▶ **User lists:** Futurus Team reads the Novell NetWare bindery at installation time, but the product does not yet provide for synchronization thereafter.

▶ **Third-party support:** Futurus awaits agreement among several groupware vendors on suggested data interchange issues before [making the Futurus Team programming interface and file format information available]. Our Team Combo phone message center already uses a DBF database structure.

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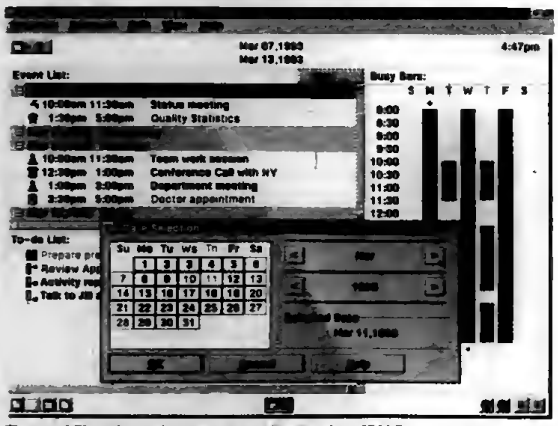

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Sick software

Inferior software doesn't spontaneously generate. Creeping user requirements, excessive schedule pressure and management malpractice are among the factors that put software at risk

The year 1993 marks the 50th anniversary of the software and computing professions (the contract to build the ENIAC computer is dated June 5, 1943). At 50 years of age, neither the industry nor the people within it are young. The 50-year mark is often a time of midlife crisis for people. It is also a time of midlife crisis for industries, and software is now in the midst of one.

This is an excerpt from Capers Jones' forthcoming book, *Assessment and Control of Software Risks*, to be published by PTR Prentice Hall this month. (Copyright 1994 PTR Prentice Hall.)

To date, the computing and software industries have been great economic and intellectual triumphs for the U.S. About 40% of all the software that is operating in the world originated in the U.S.

If the U.S. intends to be the world's most successful software provider in the 21st century, as it has been in the 20th, then we must avoid complacency and approach software engineering with energy, rigor and effective methods and tools.

By Capers Jones

Software has long been regarded as one of the most risk-prone of all engineering activities. Risks such as schedule slips and cost overruns tend to occur on more than 50% of all large systems. It is not uncommon to see even more severe risks, such as cancellation of a project prior to completion or serious quality deficiencies.

Some risk factors are so serious that unless we handle them, projects and enterprises may be in jeopardy. After studying thousands of software projects at hundreds of enterprises, we've come up with 50 major problems that affect software. What follows are five of the risk factors that have the greatest potential for doing serious damage.

Sick software, ***page 116***

Sick software

CONTINUED FROM PAGE 115

Inadequate measurement

Tracking and cost-collection systems for software projects tend to leak and omit major portions of software expense. Unpaid overtime, managerial effort, administrative effort, user effort and many specialist groups such as quality assurance and technical writing are often omitted from project data.

In some cases, there is no project tracking at all and, hence, the leakage is 100%. For enterprises that attempt software cost tracking, the average leakage ranges from 35% to 50%.

A major leak from cost-tracking systems is the work performed by users. For large civilian MIS applications, user work on tasks such as requirements, participating in reviews, writing portions of the documentation and acceptance testing can sum to almost 20% of the total effort. Yet this effort is almost never recorded because user time is not part of most projects' cost accounting structure.

FREQUENCY

Inadequate measurement is present in more than 90% of all U.S. companies, government agencies and military services. Even basic cost and resource tracking in the U.S. tends to omit unpaid overtime and managerial costs and is often in error by 30% to 70%.

COST IMPACT

The direct costs of inadequate measurement are normally considered to be zero. Note that there is a catch-22 associated with the direct costs of measurement: Only companies that measure know what it costs and what its value is.

Almost two-thirds of the total resources in the software industry are spent on things that have no positive benefit to the enterprise (based on a study carried out within ITT). The 65% wastage is the effort spent on harmful or nonproductive activities: buying productivity tools that do not work; delayed projects; unnecessary projects; reworking carelessly developed projects; canceled projects; and bug and defect repairs for problems that might have been prevented or removed early.

Thus, for a large Fortune 500 enterprise with an annual software budget of $500 million, about $325.5 million will be dissipated because of "friction" associated with current software problems.

The most effective preventive methods of inadequate measurement are cultural. Those enterprises in which the corporate culture is oriented toward excellence and "management by fact" have the best situation for prevention.

Excessive schedule pressure

Irrational schedules and excessive schedule pressure have occurred on more than 65% of all large projects we've assessed to date. Excessive schedule pressure is a key contributor to poor quality, canceled projects, low morale, fatigue, burnout and high attrition rates among software personnel.

FREQUENCY

Excessive schedule pressure is the most common of all serious software engineering problems. It has been observed in about 75% of all MIS software projects larger than 1,000 function points in size. For projects larger than 5,000 function points, the frequency approaches 90%

COST IMPACT

The direct costs of excessive schedule pressure are difficult to measure because one of its by-products is a massive amount of unpaid overtime, sometimes exceeding 30 hours per week!

An indirect cost of excessive schedule pressure is that of low quality. The number of bugs reported in the first year of projects with excessive schedule pressure can be up to four times higher than normal. This can raise the first-year defect repair costs to more than $200 per function point, as opposed to less than $50 per function point for more carefully developed software.

Unfortunately, by the time excessive schedule pressure becomes visible, it is usually too late to control it.

Management malpractice

The root cause of management malpractice can be traced back to inadequate training in the six basic tasks of software project management: sizing, estimating, planning, tracking, measurement and assessment.

FREQUENCY

For licensed professions such as medicine and law, the incidence of malpractice is about 5%. For unlicensed professions such as software management, the incidence of malpractice exceeds 15%. The most frequent kinds of software management malpractice are severe schedule errors, severe cost overruns and inadequate quality control.

COST IMPACT

It is difficult to quantify management malpractice in dollars and cents. However, the U.S. average for software projects in 1993 is about $1,000 per function point. For many of the projects where the costs exceeded $1,500 per function point, we've found management malpractice to be among the contributing factors.

Management malpractice may also be associated with more than half of all canceled projects in the U.S.

Methods of prevention include the following: establishing criteria for managerial selection, appraisals and promotion; establishing annual opinion surveys and using them as a way of gaining visibility of malpractice; creating a human resources or personnel function; establishing a mentorship program under which senior managers will attempt to pass on their knowledge to new managers; establishing a management training curriculum that includes both personnel and technical subjects; setting aside days per year for management training; improving the training in the domains in which management malpractice is most common (i.e., planning, estimating, quality control); and establishing a management compensation plan that is not significantly below competitive averages.

Creeping user requirements

The rate of growth of creeping user requirements is about 1% per month. Thus, for a three-year project, about one-third of delivered functionality will have been added after the requirements phase.

FREQUENCY

Creeping requirements are endemic to the software industry and seem to occur on more than 70% of all applications over 1,000 function points. The severity of requirement creep is directly proportional to the size of the application. The average creep for a sample of 60 projects was 35%. The largest observed creep in unanticipated requirements was 200%.

COST IMPACT

The cost impact of creeping requirements can be quantified with very high precision by means of function point metrics. Assume that the average cost to build a project is $1,000 per function point, and the project starts with requirements that total to 1,000 function points. Using these numbers, the project has an initial cost estimate of $1 million.

Now assume that new requirements are added that total to 25%, or some 250 new function points. The project will now cost $1.25 million because the creeping requirements portion cost $250,000.

In real life, the situation is somewhat more complex because the costs of creeping requirements may be higher than the costs of the original functionality if the requirements occur too late in the development cycle.

The use of prototypes is beneficial in minimizing this problem. Creeping requirements are usually less than 10% for projects that use this technology. Joint application design (JAD) technology is also effective, and it, too, can reduce creeping requirements to below 10%.

Canceled projects

The cancellation rate for software projects is directly proportional to the overall size of the system and is acute above 10,000 function points or 1 million source statements.

For large systems in excess of 10,000 function points, such as operating systems, telecom systems and the like, the cancellation rate approaches 50%. Ominously, an "average" canceled project is about a year late and approaches or exceeds twice its planned budget at the time of cancellation.

FREQUENCY

Canceled software projects correlate with the size of the project. For projects larger than 10,000 function points, the probability of cancellation is greater than 65%. For projects larger than 5,000 function points, the probability of cancellation is around 50%. For projects between 1,000 and 5,000 function points, the probability of cancellation is around 25%. Below 1,000 function points, cancellation rates drop rapidly.

COST IMPACT

For 1993, the approximate dimensions of canceled projects in the U.S. are these: 12 million function points worth of canceled projects, with a total dollar waste of $14.3 billion and a loss of productive staff time of over 285,000 person-years of total software effort. The frequency of canceled projects in Japan appears to be only about half that of the U.S.

.....

The risks cited here are only the tip of the iceberg. The encouraging aspect of software risk management is that new methods such as process assessments and the use of functional metrics are proving to be remarkably effective in identifying risks that were long hidden.

A combination of vigorous process assessments, accurate measures and metrics and multithread process improvement programs can minimize or eliminate many risk factors and begin to make the phrase "software engineering" take on serious meaning. ■

Jones is an international consultant, speaker and author. He is chairman and co-founder of Software Productivity Research, Inc. in Burlington, Mass.

Watch for these Software Risks

Few projects have more than 15 software risk factors at any time, but many projects have half a dozen simultaneously. Here are the five most frequently encountered risk factors for large IS shops:

MIS projects
(accounting systems, claims handling systems, etc.)

RISK FACTOR	PERCENT OF PROJECTS AT RISK
Creeping user requirements	80%
Excessive schedule pressure	65%
Low quality	60%
Cost overruns	55%
Inadequate configuration control	50%

These findings are based on Software Productivity Research, Inc.'s assessment of thousands of software projects at hundreds of client companies.

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Computer Careers

SPREADING SUPPORT

Jobs in

By Leslie Goff

Support veterans are not replacing their mainframe skills in the face of distributed computing; they're expanding them.

While programmers and systems analysts generally choose between moving into the PC world and continuing to work on the mainframe, service and support personnel have had to assume new responsibilities for their companies' growing infrastructure.

"The support aspect of my job more than doubled," says Johnny Bauer, a technical support analyst at the Goodyear Beaumont Chemical Plant in Beaumont, Texas. "I started spending more time outside the data center and on the phone taking users' calls. Their biggest problem was a lack of training in Windows."

For Bauer, who has nine years of data center experience under his belt, picking up support for his site's new client/server environment was expected by upper management. "It was rough to keep one step ahead of the users," Bauer says. "But I just picked it up as I went along through manuals and trial and error."

Bauer purchased a home PC and began teaching himself the Windows applications that his users were learning. Since Goodyear Chemical put in its first PC four years ago, Bauer has learned about client/server, Token Ring, fiber optics, OS/2, Windows and a number of software applications.

> You have to be able to relate to the business unit users and managers even if you're the fix-it person.
> **Glen Jurmann, office technology section manager, Baxter Healthcare Corp., Deerfield, Ill.**

At the same time, he continues handling his data center duties.

Like Bauer, Glen Jurmann, office technology section manager at Baxter Health Care in Deerfield, Ill., says his staff has beefed up their understanding of networks, application development tools, the inner workings of PCs and a myriad of operating systems and platforms.

Jurmann adds that to effectively support Baxter's user base, which often adds homegrown programs to the applications mix, his staff has to understand the interoperability of all those platforms and how they interact with corporate data.

> Support personnel who were comfortable in the IS ivory tower are going to have a hard time [with distributed systems], but if you're willing to roll up your sleeves, you'll have more opportunity.
> **Jim Shay, divisional systems support manager, Eaton Corp., Milwaukee**

"The protocols being used to access [corporate] data vary from LAN to LAN. While we're standardizing this as much as we can, there will always be advanced users developing their own applications," Jurmann says.

The computer-literate work force represents another change for the support staffer. Many can now resolve minor problems that used to require a service call — but these users often know just enough to be dangerous.

"They aren't afraid to try things that a few years ago they wouldn't attempt," says Sam Campbell, a technical support analyst at John Deere Des Moines Works in Des Moines, Iowa. "We have to go in and be the cleanup guys."

For instance, John Deere Des Moines Works uses a number of plotters for engineering designs. Campbell says he would initially install shared plotters on the network and configure them himself. As users became more literate, however, they started changing the configurations and "did not always reconfigure them the way they needed to operate in a shared environment," he says.

Yet despite the extra challenges, moving out of the data center into the user community has its advantages. For the self-motivated support staffer, distributed computing can mean the opportunity for increased visibility among business unit management, says Jim Shay, divisional systems support manager at Eaton Corp. in Milwaukee.

"If you're willing to roll up your sleeves, you'll have more opportunity, especially if you have a knack for systems integration," Shay says. "People who can deliver that kind of service will do really well, but you need to wrap up a package of soft skills, adaptability, hard work and problem-solving."

Goff is a free-lance writer in New York.

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Chair, Department of Computer Technology Indiana University Purdue University Indianapolis (IUPUI)

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An IDG Communications Publication

By David Baum

In some companies, knowledge of a fourth-generation language (4GL) may be the only thing standing between you and the back door. Many organizations are adopting 4GL technology as a way of reducing head counts, and the "survivors are often those with 4GL skills," says Victor Janulaitis, president of Positive Support Review, a recruiting firm in Santa Monica, Calif.

Numerous products fall under the 4GL label, from end-user query languages and forms-oriented report generators to complete application development environments. Unfortunately, if your skills stop at third-geoeration languages, the shift to 4GLs is not an easy one to make.

One of the main reasons for that is a lack of standards, says Keith Therrien, president of TAD Consulting in Reading, Mass. Most 4GLs are structured around the products they support, such as a database or report writer. Syntax varies widely from one 4GL to the next, and they adhere to no common, external standards other than a few screen standards.

Most of the new graphical user interface-based 4GL products are also event-driven, points out Dave Smith, an application development manager at Sapiens USA in Goleta, Calif. "In a traditional 3GL program, the user responds to prédefined prompts, and the structure of the program is prompt, read, input," Smith says. "The program is in control and the nser responds."

In an event-driven program, however, the program must respond to events initiated by the user. "You can't think in terms of putting up a prompt, waiting for a response and then moving down a particular path in the program," Smith says.

"Instead of one procedural, monolithic block of code that follows a tinear progression, the program is a series of small pieces of processing attached to many discrete events," he says.

The main challenge to learning a 4GL is understanding its particular model and event sets, Smith adds. Possible events associated with a particular field, for example, might include initially inputting data into the field and updating the data, as well as the actions that occur as the user moves the pointer in and out of the field. "These are all little places where you can attach your processing," Smith explains.

Smith and Therrien also agree that a good understanding of SQL is important. "You may not have to actnally program in SQL because many of the 4GLs take care of that for you," Therrien says. "But you still need to understand relational concepts and what the 4GL is going to do behind the scenes to implement them."

Adds Smith: "You are still mapping the world of your application into a relational model. You need to know all the basic relational concepts — what constitutes a transaction, what a join is, what an outer join is."

Ken Fleming, director of technology at Encompass in Cary, N.C., stresses the importance of actually training with a 4GL, particularly for 3GL programmers: "3GL coders will hring a procedural mind-set to the 4GL environment and fail to use the new environment to its full potential."

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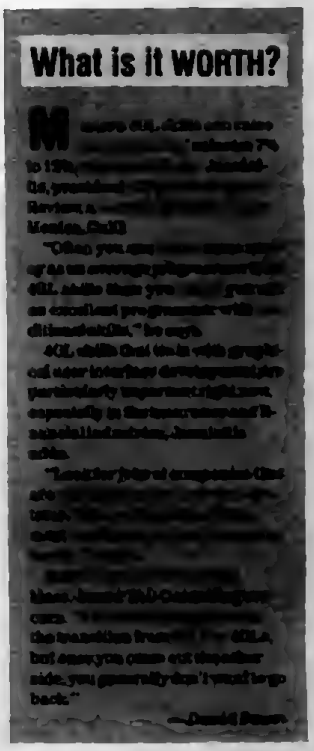

Baum is a free-lance writer in Santa Barbara, Calif.

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Programmer Analyst to analyze, design, implement, test, document and maintain multi-state nonstandard auto insurance applications, multi-user networking claim property system, automated underwriting referral system and design, implement automatic file downloading from mainframe to PC, design/implement automatic dial-in file transfer, design/install peer-to-peer network using Novell Netware-Lite and implement GrumpFish Ad Hoc reporter. Use IBM/PS2 model 77 PC and IBM 3090. Use operating systems OS/2 2.1, DOS 5.0, VM/CMS, MVS and Novel Netware 4.0. Also use structured/modularized programming, relational database design by E-R model and implement by DB2, ergonomic design for graphic user interface and intelligent system design and analysis. Use programming languages SQL, Clipper 5.2, C, COBOL II, Visual Basic, PcPlus Aspect, REXX and 4GL SQL. Use Network packages including Word Perfect, Lotus 1-2-3, Harvard Graphic, Futurus, CCPlus and Flow Chart. Use working flow chart to analyze user requirement. Create project plan and estimate/optimize project scheduling. Requires: 1) M.S. in Management Information Systems, 2) Completion of following graduate courses: Business Systems Programming Method (COBOL II), Computer Graphics, Linear and Integer Programming, Intro to Expert Systems, Advanced Topic in Data Management, graduate Master's project using SQL and C to design an integrated information system, 3) B.S. in Management Science. 40 hrs/wk, $29,866/yr. Send two resumes to Chris Richard, #940030, Job Service Office, 206 N. Broom Street, Madison, WI 53703.

Software Engineer wanted to manage the design, implementation and testing of V-Crush using appropriate software techniques and advanced mathematical principles; maintain software system after its completion and adapt to various software systems; develop an interactive and graphical user interface for VCRUSH that uses X-Window, Motif, and PHIGS on UNIX-based platforms; automate VCRUSH data entry; develop necessary interfaces to incorporate VCRUSH in several modern computer environments; develop the necessary manuals to use VCRUSH and train new users to use it; Reqs: Ph.D. in Computer Science or Computer & Communications Science. Thesis research must involve leading a team in the development of software for the maintenance of software systems including developing a graphical user interface as well as programming with C & C++, X-windows, Motif, UNIX, HP-UX, and 1 grad univ. course which included programming with FORTRAN. $51,217.00/yr., 40 hrs./wk. Send resume to 7310 Woodward Ave., Room 415, Detroit, MI 48202. Ref. #85693. * Employer Paid Ad *

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Software Consultant for Software Consulting company. Duties include engineer consultant with auto maker for CAD/CAM applications; specifically on EDGS (Electrical Design Graphics System) Specification, design, and development of an object-oriented graphics system, IDB (Intelligent Data Block), for efficient storage and retrieval of part data in CAD/CAM department. Interface IDB with various CAD applications and WERS (World Engineering Release System) relational database. Duties require working on a variety of platforms running UNIX and using the following software and languages: SAS/SQL, C, C++, Xlib, OSF Motif, UNIX IPC (Interprocess Communication), TCP/IP based Client/Server models and network protocols. Requires a Masters of Science in Computer Science with at least one course or project in the following: -UNIX/C, -Design and development of object-oriented programs using C++, -Development of Graphical User Interface using X-Windows/Motif, -Client/Server models and networking protocols, and, -UNIX IPC (Interprocess Communication). Requires two years experience in the job offered or two years experience as a Mechanical Engineer. Salary is $40,500.00 per year. Hours are 8:00 am to 5:00 pm, forty per week. Send resume to 7310 Woodward, Room 415, Detroit MI 48202 Ref #98193 Employer paid ad.

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Assistant Director of Information Resources for Academic Computing

Butler University seeks an experienced, service-oriented person to oversee instructional needs for new and existing faculty in Macintosh, DOS/Windows, VAX and internet software applications. He/she will proactively interact with faculty to provide computer related consulting and advice, as well as to inform faculty of new applications as they become available.

Requirements include strong computing background, excellent communication skills, and computer training or teaching experience. Preference will be given to candidates with experience in this type of position in higher education. Must possess Master's degree or equivalent combination of education and experience.

The Information Resources department provides computing assistance for all forms of computing on campus. This position is an administrative appointment and will be the principal computing liaison with the faculty. The salary range is $35-40,000.

Butler is an independent university located in a residential area with an enrollment of approximately 4,000 students. The computing environment at Butler includes Macintosh & IBM compatible micros in 12 labs (2/3 Mac, 1/3 PC), automated library system and a Digital VAXcluster. Full time faculty all have computers in their offices. All systems on campus are networked, and interconnected to the internet. Send resume along with names and phone numbers of 3 professional references to: Jon Sorenson, Chair of Search Committee, Department of Mathematics and Computer Science, Butler University, 4600 Sunset Avenue, Indianapolis, Indiana 46208. Email: Sorenson@Butler.Edu. Review of applicants will begin January 20, 1993.

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APPLICATION DEADLINE: Applications and job descriptions can be obtained by calling (502) 782-2489 and specifying request. Resume with cover letter should be submitted to: Human Resources Department, City of Bowling Green, P.O. Box 430 (1001 College Street), Bowling Green, KY 42102, specify salary history and minimum salary requirement. Applicants will be provided with a complete employment application, job description, and benefits summary. Deadline to submit resume: 4:00 p.m., Friday, January 7. The City of Bowling Green is an Equal Opportunity Employer.

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Programmer Analyst wanted to design and implement human resources programs including a skills test program, survey results analysis system and an employee personnel database administration system; provide computer hardware and software support to other consultants, maintain and administer the Novell 386 3.11 network o.s. and software development using C and C++ language, XBASE (including FOXPRO, dBASE & CLIPPER), MS-DOS o.s. & IBM OS/2 o.s. Hardware supported are IBM PCs, printers, modems & other peripherals. Reqs. Master's in Info. Sys. or Comp. Sci., 1 yr. exp. in job offered or 1 yr. related exp. as a Programmer. Related exp. must include s/w development using C++ language including FOXPRO, dBASE & CLIPPER, MS-DOS o.s., IBM OS/2 o.s. & Novell 386 3.11 network o.s., $32,015/yr., 40 hrs/wk. Send resume to 7310 Woodward Ave., Rm. 415, Detroit, MI 48202. Ref #83793. "Employer Paid Ad."

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Our selected candidate will have 7+ years data processing experience with a minimum of 3 years' experience in data communication implementation and support. We require a background in LAN, WAN and multiplatform system integration using bridges and routers. Experience with IBM SNA/NCP and VTAM environments is preferred.

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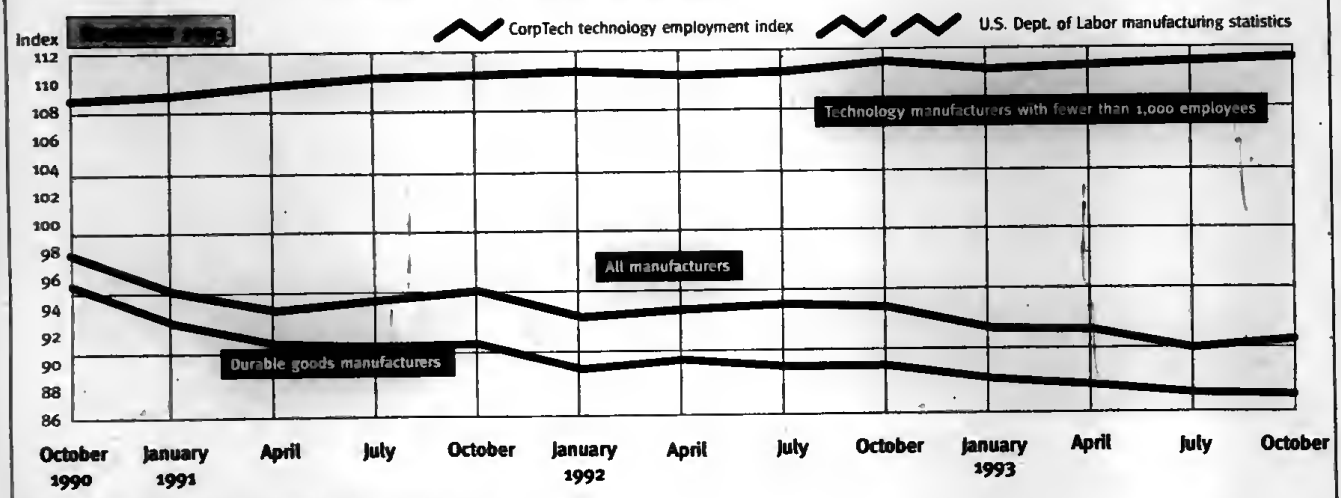

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E-mail

Practical tips for finding the E-mail package that's right for YOU

By Bronwyn Fryer

Electronic mail has become a necessity. Yet purchasing a package on the fly can lead to problems as networks grow.

Experts who have recently gone through the evaluation process recommend the following criteria-setting tips:

Evaluate needs

Most information systems managers make the mistake of looking at off-the-shelf packages before fully evaluating current and future needs, says Joe Tumminaro, vice president of technology at J. Frank & Associates, a Palo Alto, Calif., consulting firm. "Once you've made the commitment, changing your mind is much more difficult than it is with most software."

Before you even begin looking at packages, most experts recommend getting detailed answers to questions:

- What hardware and operating system platforms must the mail system support?
- How many users must it support now? In two years? Five years?
- Will remote users at multiple sites need to use the system?
- What kinds of gateways do you need?
- Must users access external services, such as CompuServe?

Check under the hood

The most common E-mail problems occur in the following areas. If you cannot test for them, ask the vendor for reference sites to show you how they fared.

- **Interoperability:** For companies with heterogeneous computing environments, interoperability across platforms is an overriding problem. "As Macintoshes, PCs and Unix systems are added to a network, there can be lots of fallout," Tumminaro says. For this reason, it's important to make sure that a message can be sent from a Unix system to a Macintosh or from a LAN to a wide-area network. Try sending a large embedded file across the network.

Attachments and embedded files should be sent across intact and the message's format and content preserved.

- **Scalability:** As a network grows, adding updates or integrating directories can become increasingly difficult. "Make sure the package can support from two to 20,000 users without having to do massive administration," says Nina Burns, president of Creative Networks, Inc. in Palo Alto, Calif. "If you have more than one directory, check to see whether a built-in gateway will allow you to automatically propagate new local and remote users to other directories on other E-mail systems."
- **Architecture:** Look at not only the package's underlying architecture but at the vendor's plans for improving it, says David Ferris, president of Ferris Networks in San Francisco. "Ask yourself how good a job the vendor is doing in designing the software and make sure it has a clear plan for supporting X.400 or SMTP backbones, client/server systems, network management and the like."
- **Remote communication:** Outside personnel should be able to send and receive mail transparently. The package should support a number of modems and use open communications protocols, Tumminaro says. At the same time, check to see how the system connects to outside communications services.
- **User interface:** The system should be as simple as possible to use and administer. "Administration tasks, such as updates, should be straightforward and occur without requiring taking the server off-line," Burns says. "The administrator should also be able to perform routine tasks from one central site."

Test the vendor

- **Third-party solutions:** No E-mail package is perfect; therefore, third-party support is important, Ferris says. "These products have real holes, and the vendors can't do everything. Third parties fill the gaps. The more third parties, the merrier."
- **Service/support:** Before signing on the dotted line, make sure to secure the vendor's full cooperation in answering questions and solving problems. That way, you can find out what kind of support you can expect afterward. Also make sure the vendor will assume responsibility for sorting out complex interconnects between systems, Tumminaro says.

"You want a single vendor to support all the possible interconnects all the way through."

- **References:** Ask to speak to sites that most closely resemble your own. Find out what other mail systems they use, as well as what they plan to add within two to five years including X.400 backbones, gateways and so forth. Find out how users are on the system and what desktop applications are used. Ask what kind of interoperability and capacity testing the company has done.

Fryer is a free-lance writer in Menlo Park, Calif.

You can't tell an E-mail package by its cover

Ron Mechsner, a technology analyst at Mercedes-Benz of North America, Inc. in Montvale, N.J., learned the hard way that there is more to E-mail than a pretty face. In September 1992, he sought an E-mail package that would let 1,200 Windows users in the U.S. access the company's mail system running on its mainframe in Stuttgart, Germany.

Mechsner and his staff opted for a LAN version that touted a graphical user interface as well as a gateway to the mainframe. Instead of conducting a full evaluation of their requirements however, they were smitten with the vendor's promise that it would meet their immediate needs. "It sounded perfect," Mechsner says. "It seemed to have everything we were after."

With a three-month deadline, the company installed the package on a pilot network. It soon discovered the package was a Version 1.0 product the vendor had bought from someone else. "It was like a Hollywood set," Mechsner says. "We opened the door of what looked like a real product and found out it was a piece of cardboard held up by two-by-fours."

After wrangling with the vendor for months and missing its deadline, the staff decided to abandon the project and start from scratch. This time they were careful to perform a full evaluation of their needs beforehand. The vendor's support, Mechsner says, was key to the final decision.

—Bronwyn Fryer

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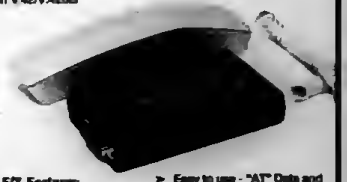

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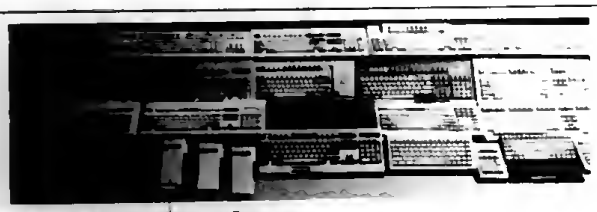

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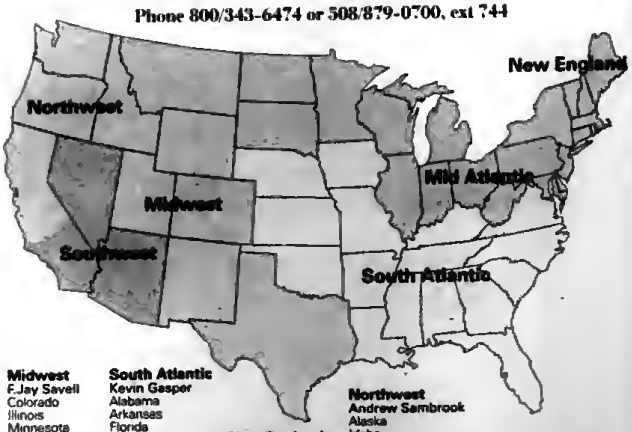

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Issue Dates	Ad Closings Color*	Ad Closings B&W	Editorial Features	Show Distribution	Ad Readership Study Issue	Response Card Deck
Dec. 27 & Jan. 3	Dec. 10	Dec. 17	**Special Edition:** Annual Forecast Issue			
Jan. 10	Dec. 24	Dec. 31	**Closer Look:** Object Database Management Systems		Starch	Mails: Jan. 12 Close: Dec. 11
Jan. 17	Dec. 31	Jan. 7	**CW Guide To: Spreadsheets and Spreadsheet Utilities** The New Capabilities *Buyers' Satisfaction Scorecard:* Windows Packages from Borland, Lotus, Microsoft, etc. *Firing Line:* Latest Windows Offering			
Jan. 24	Jan. 7	Jan. 14	**Closer Look:** ATM	**ComNet** Washington D.C., 1/25 – 1/27		
Jan. 31	Jan. 14	Jan. 21	**CW Guide To: Departmental Servers and Superservers** Matching a System to Departmental Needs (including Alpha, Tricord, Netframe, Sun, RS/6000, NCR, Sequent, Wyse, Compaq) *Buyers' Satisfaction Scorecard:* Leading RISC Servers *Firing Line:* Latest Server Product	**Executive Technology Summit** Tarpon Springs, Florida 2/2 - 2/4		
February		Dec. 27	**CLIENT/SERVER JOURNAL**	All Shows Feb. - April	Harvey	
Feb. 7	Jan. 21	Jan. 28	**Special Quarterly Report:** Re-engineering the Workplace		Starch	Mails: Feb 9 Close: Jan 3
Feb. 14	Jan. 28	Feb. 4	**CW Guide To: Management Tools for Large Networks** What Works When Systems are Distributed *Buyers' Satisfaction Scorecard:* Multivendor Network Management Software from DEC, HP, IBM, Sun, etc *Firing Line:* Latest Management Package	**Networks Expo** Boston, 2/15 - 2/17		
Feb. 21	Feb. 4	Feb. 11	**Closer Look:** Windows and OS/2 Imaging Software			
Feb. 28	Feb. 11	Feb. 18	**CW Guide To: Work Flow Software** The Reality Behind the Promises *Buyers' Satisfaction Scorecard:* Leading Work Flow Software Systems *Firing Line:* Latest Work Flow Managers	**GroupWare '94** Boston, 2/28 - 3/3		
Mar. 7	Feb. 18	Feb. 25	**Closer Look:** Desktop Laser Printers		Starch	Mails: Mar. 9 Close: Jan. 31
Mar. 14	Feb. 25	Mar. 4	**CW Guide To: RAID** Choosing Among the Various Levels of Disk Array Technology *Buyers' Satisfaction Scorecard:* Leading Server-based RAID Systems *Firing Line:* Latest Mainframe RAID Subsystem			
Mar. 21	Mar. 4	Mar. 11	**Closer Look:** Unix Workstations	**UniForum** San Francisco, 3/23 – 3/25		
Mar. 28	Mar. 11	Mar. 18	**CW Guide To: Wireless Networks** The Spectrum of Technologies, Including LANs, WANs and Radio Frequency *Buyers' Satisfaction Scorecard:* Leading Wireless LANs *Firing Line:* Wireless Services Product			
Apr. 4	Mar. 18	Mar. 25	**Closer Look:** Personal Productivity Software			
Apr. 11	Mar. 25	Apr. 1	**CW Guide To: NT vs. OS/2 vs. Unix** Desktop and Server Choices *Buyers' Satisfaction Scorecard:* Leading Server Operating Systems from IBM, Microsoft, Sun, etc. *Firing Line:* Latest Desktop Operating Systems from a Leading Vendor		Starch	Mails: April 13 Close: Mar. 17
Apr. 18	Apr. 1	Apr. 8	**Management Special:** IS Architecture in Times of Change	**AIIM** New York 4/18 - 4/21 **SIM Conference** Florida, 4/20 - 4/22		
Apr. 25	Apr. 8	Apr. 15	**CW Guide To: Data Access Tools** New Tools for Quick Access to Data Buried in Older Flat-file and Hierarchical Databases *Buyers' Satisfaction Scorecard:* Leading SQL-based Data Access Tools *Firing Line:* Latest Data Access Tool from a Leading Vendor			
May		Mar. 30	**CLIENT/SERVER JOURNAL**	All Shows May - July	Harvey	
May 2	Apr. 15	Apr. 22	**Closer Look:** Distributed Computing Environment	**Interop + Networld** Las Vegas, 5/2 - 5/6		
May 9	Apr. 22	Apr. 29	**CW Guide To: Mobile Computing** From Notebooks to PDAs *Buyers' Satisfaction Scorecard:* Leading Notebook Computers *Firing Line:* Latest Sub-notebook Product from a Leading Vendor	**International DB2 Users Group** San Diego, 5/8 - 5/12		Mails: May 11 Close: April 14
May 16	Apr. 29	May 6	**Special Quarterly Report:** Re-engineering the Workplace		Starch	
May 23	May 6	May 13	**Windows World Open Supplement** **CW Guide To: The Impact of OLE 2.0** What OLE can do for IS and How to Make Sure Your Favorite Desktop Software Vendor is Up to Speed *Buyers' Satisfaction Scorecard:* Leading OLE Applications *Firing Line:* Latest OLE Development Tool	**Windows World Comdex Spring** Atlanta, 5/23 - 5/26 **DB Expo** San Francisco, 5/24 - 5/27		
May 30	May 13	May 20	**Annual Job Satisfaction Survey** How IS Professionals and Managers Really Feel About Their Jobs and Careers			
June 6	May 20	May 27	**CW Guide To: Distributed DBMS** Selecting the Right Engine for a Distributed Database Architecture *Buyers' Satisfaction Scorecard:* Leading Relational DBMS *Firing Line:* Latest Relational DBMS Product	**Computerworld Smithsonian Awards** Washington, DC		Mails: June 8 Close: May 2
June 13	May 27	June 3	**Closer Look:** AS/400		Starch	
June 20	June 3	June 10	**CW Guide To: Mainframes** How Big Iron Vendors are Answering the Challenges of the Mainframe's Changing Role *Buyers' Satisfaction Scorecard:* Leading Mainframes from Amdahl, HDS, IBM, etc. *Firing Line:* Latest Mainframe Model			
June 27	June 10	June 17	**Closer Look:** PCMCIA Cards	**PC Expo** New York, NY, 6/28 - 6/30		

Editorial contacts (508) 879-0700 CW Guide: The Guide includes a package of articles on the stated topic, in addition to Buyers' Scorecard and Firing Line
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Kendall Square Research finally rebounded after appearing on the losers side in seven of the last nine weeks. Intel and Motorola were pulled down on lowered outlook from a Wall Street analyst.

[redacted]

On Broadway and Seymour

It has been a rough year for **Broadway & Seymour, Inc.** (BSIS). The question for investors is whether the company has turned the corner.

Broadway & Seymour provides data processing services, imaging products and systems integration for banks and pension plan administrators. The company has enjoyed consistent growth (see chart) until this year, when acquisition charges and slipping margins contributed to a third-quarter loss of $5.7 million, or 76 cents per share. The operating loss was 10 cents per share.

Rich Edwards and Eric Upin, analysts at Robertson, Stephens & Co. in San Francisco, issued a neutral report Dec. 2, saying they "expect investors to remain on the sidelines" until concrete evidence surfaces that Broadway & Seymour's business has stabilized.

The analysts expressed concern over the company's balance sheet; Broadway & Seymour's cash position has fallen to a half-million dollars, 95% below last January's levels. The process of absorbing Gateway Conversion Technology is still ongoing, and Broadway & Seymour will also acquire Elite Data Processing's law firm management software in February.

Edwards and Upin said they believe Broadway & Seymour will have to reduce its current cost structure to return to prior profitability levels.

On the other hand, Paul Bloom, an analyst at Volpe, Welty & Co. in San Francisco, rated the company's shares a Buy in a Nov. 22 report. Though Bloom said he expects the fourth fiscal quarter to be slow, he noted that BSIS shares currently trade at a low multiple of estimated earnings for the next fiscal year. The company has a strong pipeline of prospective deals, Bloom said. *—Derek Slater*

Brighter Days

Recent woes have interrupted a track record of solid financial results for Broadway & Seymour

	1991	1992	1993
Revenue (in millions)	$49.4	$53.3	$64.0
Profit (in millions)	$1.5	$1.7	$3.6

Figures for fiscal years, which end Jan. 31 of the same calendar year

Source: Company records

Exch	52-Week Range			Dec. 10 3 pm	Wk Net Change	Wk Pct Change
Communications and Network Services						
OTC	46.00	19.63	3 Com Corp. (H)	45.00	2.00	4.7
NYS	91.13	69.13	American Info Techs Corp	76.38	-1.25	-1.6
NYS	65.00	47.75	AT&T	55.00	0.63	1.1
OTC	4.44	0.96	Artel Communication Corp.	3.19	-0.06	-1.9
OTC	26.25	32.30	Banyan Systems Inc (H)	25.50	1.00	4.1
NYS	69.13	49.25	Bell Atlantic Corp	59.63	-1.38	-2.3
NYS	63.88	50.25	BellSouth Corp	57.00	-0.30	-0.9
NYS	14.75	4.25	Bolt, Beranek & Newman	13.00	-0.25	-3.9
OTC	18.30	9.50	Brooktrout Technology	13.25	0.25	1.9
NYS	119.00	70.75	Cabletron Systems	110.75	-3.00	-2.6
OTC	36.30	11.25	Centigram Communications	34.00	-0.25	-0.7
OTC	55.30	22.88	Chipcom Corp	45.00	-5.00	-10.0
OTC	62.25	34.38	Cisco Systems Inc (H)	59.63	-0.88	-1.4
OTC	18.38	8.00	Compression Labs Inc	13.50	0.63	4.4
OTC	36.00	21.75	CrossComm	20.75	-1.30	-5.0
OTC	4.63	1.59	Data Switch Corp. (L)	1.59	-0.16	-8.9
NYS	19.88	12.38	Digital Comm. Assoc.	18.75	0.00	0.0
OTC	11.75	3.50	Digital Systems Int'l Inc.	3.50	-0.13	-3.4
OTC	73.13	18.00	DSC Communications	38.75	-3.38	-5.4
OTC	9.30	4.75	Fibronix Int'l Inc.	5.25	-0.75	-4.5
OTC	23.00	8.75	FoaNet Corp	19.25	-1.00	-4.9
OTC	4.38	1.75	Gandalf Technologies Inc.	2.75	-0.75	-8.3
OTC	2.06	0.69	Gateway Communications	0.88	-0.06	6.7
NYS	15.75	4.75	General Datacomm Inds.	10.00	-0.13	-3.2
ASE	3.63	2.00	Go Video	3.00	0.00	0.0
NYS	39.88	33.13	GTE Corp	36.13	-0.75	-2.0
NYS	94.75	69.00	ITT Corp	91.75	3.75	4.3
OTC	29.88	10.81	MCI Communications Corp	24.38	-0.50	-2.0
OTC	6.50	1.50	Microcom Inc	5.13	-0.13	-2.4
OTC	24.25	3.30	Netrix Corp	6.13	0.00	0.0
OTC	19.00	6.50	Network Computing Devices	6.75	0.00	0.0
NYS	11.50	5.38	Network Equipment Tech.	8.88	-1.00	10.1
OTC	20.13	8.00	Network General	16.13	1.38	8.3
OTC	33.88	6.88	Network Systems Corp	9.25	-0.13	-1.3
OTC	23.88	16.13	Newbridge Networks Corp	53.75	-3.63	-6.3
NYS	46.00	21.38	Northern Telecom Ltd.	29.63	1.25	4.4
OTC	25.25	17.00	Novell Inc.	19.88	5.00	20.1
NYS	48.88	40.31	Nynex Corp	41.63	-0.38	-0.9
OTC	30.00	19.00	Octel Communications Corp	25.00	-1.75	-6.5
OTC	6.13	3.75	Penril Data Comm Networks	6.13	-0.25	-3.9
OTC	30.30	14.30	PictureTel Corp	20.75	0.00	0.0
OTC	11.50	3.63	Proteon Inc	7.25	0.00	0.0
NYS	38.88	12.75	Scientific Atlanta Inc.	32.25	-1.38	-6.1
NYS	47.00	34.19	Southwestern Bell Corp.	42.50	-0.25	-0.6
NYS	40.25	25.13	Sprint Corp	32.25	-0.63	-3.9
OTC	27.38	12.30	Standard Microsystems Corp	24.63	-0.33	-0.5
OTC	39.75	10.00	Stratacom Inc.	17.00	-0.63	-3.5
OTC	42.75	20.00	SynOptics Communications	24.38	2.38	-8.9
OTC	9.88	2.88	Telebit Corp	7.25	-0.38	-4.9
OTC	17.88	5.13	Telematics Int'l Inc.	15.63	0.00	0.0
OTC	35.25	17.00	US Robotics	27.75	1.75	6.7
NYS	50.75	37.25	US West Inc.	46.30	-0.38	-0.8
OTC	65.00	29.30	Wellfleet Communications (H)	61.50	-2.50	-3.9
OTC	19.30	7.25	Xircom	15.00	-0.63	-4.0
PCs and Workstations						
OTC	5.56	2.30	Advanced Logic Research	3.38	0.13	-3.6
OTC	65.25	22.00	Apple Computer Inc.	30.00	-3.30	-4.8
OTC	25.30	12.75	AST Research Inc.	21.30	-3.00	-32.2
NYS	8.00	2.50	Commodore Int'l	3.50	0.13	3.7
NYS	24.38	41.75	Compaq Computer Corp (H)	71.88	-1.75	-2.4
OTC	49.88	13.50	Dell Computer Corp	24.38	-3.63	32.9
NYS	89.25	63.63	Hewlett Packard Co	76.13	-0.30	-0.7
NYS	44.75	23.30	Silicon Graphics	44.38	-0.38	-0.8
OTC	41.00	21.13	Sun Microsystems Inc.	27.00	-0.75	-2.7
NYS	48.00	24.63	Tandy Corp	47.00	0.30	3.1
OTC	7.00	2.30	Zeos International Ltd.	3.63	0.00	0.0
Large Systems						
ASE	8.50	6.38	Amdahl Corp	6.13	0.63	11.4
NYS	8.75	3.63	Convex Computer	5.25	-0.25	-4.5
OTC	5.13	2.25	Cray Computer	2.25	-0.25	30.0
NYS	30.88	20.38	Cray Research Inc.	26.50	-0.30	-1.9
NYS	13.88	7.75	Data General Corp	9.38	-0.38	-3.8
NYS	49.25	30.38	Digital Equipment Corp	35.00	-1.25	-3.4
NYS	47.38	32.75	Harris Corp	45.75	-0.50	-1.1
NYS	63.38	40.63	IBM	53.63	0.25	0.5
OTC	25.75	5.25	Kendall Square Research (L)	6.88	1.30	27.9
NYS	141.30	87.00	Matsushita Electronics	133.00	1.00	0.8
OTC	23.75	12.75	NetFrame	17.30	1.38	8.5
OTC	26.00	9.25	Parallan Computer	13.38	-1.38	-9.3
OTC	23.25	8.50	Pyramid Technology	13.25	-1.25	-8.6
OTC	24.00	11.25	Sequent Computer Sys	16.38	-0.13	-0.8
OTC	6.00	1.38	Sequoia Systems Inc.	4.06	-0.38	-8.4
NYS	41.25	20.25	Stratus Computer Inc.	29.13	1.38	5.0
NYS	16.88	8.50	Tandem Computers Inc	31.13	0.75	2.2
OTC	28.30	30.63	3DCORD Systems (H)	26.75	-0.75	-2.2
NYS	13.88	9.63	Unisys Corp	13.25	-0.63	-5.3
Software						
OTC	37.00	18.50	Adobe Systems Inc	21.75	2.63	10.8
OTC	35.25	11.75	Aldus Corp.	23.63	-1.13	-4.5
OTC	9.25	5.30	American Software Inc.	5.30	-0.88	13.7
OTC	28.13	9.50	Ask Computer Systems	14.63	-0.38	-2.5
OTC	54.75	37.00	Autodesk Inc	43.25	-2.00	-4.4
OTC	6.50	2.38	Bachman Info. Systems	3.25	0.30	18.2
OTC	42.00	24.00	BGS Systems Inc.	26.30	-0.30	-1.9
OTC	84.13	38.75	BMC Software Inc.	49.00	-1.25	-2.5
OTC	28.25	20.38	Boole & Babbage	26.30	0.30	3.9
OTC	27.25	12.75	Borland Int'l Inc.	15.13	1.00	-6.2
OTC	4.63	2.75	CE Software	3.38	-0.25	-6.9
ASE	40.25	16.41	Cheyenne Software Inc	30.38	3.13	9.3
OTC	19.30	8.25	ChipSoft	18.00	0.25	1.4
OTC	10.30	5.63	Cognos Inc.	10.25	1.75	20.6
NYS	46.25	18.00	Computer Associates	40.30	-0.88	-2.3
NYS	4.30	2.13	Computervision Corp	3.25	0.13	0.0
OTC	34.25	19.25	Compuware Corp	27.50	2.50	30.0
OTC	14.25	5.75	Comshare Inc.	10.63	1.13	13.8
OTC	20.38	5.38	Corel Corp. (H)	19.30	-0.25	1.3
OTC	15.25	3.63	Easel Corp	3.88	-0.38	-8.8
OTC	25.25	15.75	4th Dimension	20.50	0.38	3.9
OTC	19.25	9.25	Frame Technology	9.63	-0.38	3.8
OTC	12.50	8.00	Group 1 Software	9.00	0.25	2.9
OTC	35.25	13.50	Gupta	15.75	0.75	5.0
OTC	12.00	4.88	Hogan Systems Inc	9.63	-1.00	-8.8
OTC	27.75	11.25	IMRS	23.75	1.25	5.6
OTC	44.75	27.00	Information Resources	38.50	1.38	3.2
OTC	27.25	13.38	Informix Corp	19.00	-0.13	0.7
OTC	14.00	8.50	Intergraph Corp	9.75	0.38	-3.7
OTC	13.63	4.88	Interleaf Inc.	6.88	-0.38	-5.2
OTC	35.25	4.75	Intersolv Inc.	10.50	0.25	2.4
OTC	18.75	7.75	KnowledgeWare Inc. (H)	10.00	0.75	4.3
OTC	54.75	15.30	Legent Corp.	23.25	-0.25	-1.3
OTC	52.63	18.75	Lotus Development (H)	52.63	2.38	4.7
OTC	23.00	4.25	MathSoft	6.13	-0.38	-5.8
OTC	20.25	4.30	McAfee Associates	7.00	0.75	32.0
OTC	11.63	4.38	Meca Software	6.38	0.00	0.0
OTC	15.25	7.63	Mentor Graphics (H)	14.63	-0.13	-0.8
OTC	44.00	14.50	Micro Focus (L)	15.00	-0.25	-1.6
OTC	13.25	4.38	Micrografx Inc.	8.75	0.88	11.1
OTC	98.00	70.38	Microsoft Corp	81.13	-4.38	-3.1
OTC	36.15	9.44	Oracle Corp. (H)	36.15	1.50	4.3
OTC	44.75	22.30	Parametric Technology	39.30	-0.75	-3.9
OTC	40.50	23.30	PeopleSoft	30.75	-0.25	-0.8
OTC	7.13	3.30	Phoenix Technologies	3.88	-0.13	-3.3
OTC	40.00	22.00	PowerSoft	34.30	-4.38	-11.3
OTC	39.75	13.30	Platinum Software	28.30	5.75	25.3
OTC	25.00	7.25	Platinum Technology	9.63	-0.38	-3.8
OTC	60.25	32.25	Progress Software Corp.	51.25	1.75	3.5
OTC	6.30	1.94	Quarterdeck Office Sys.	2.06	-0.13	-5.7
OTC	32.00	16.00	Rainbow Technologies Inc.	17.50	-0.88	-4.8
OTC	11.38	4.25	RasterOps	7.75	-0.25	-3.1
OTC	19.25	6.30	Ross Systems	7.75	-0.25	-3.1
OTC	28.75	37.25	Sapiens Intl. Corp. N.V.	19.00	-2.75	-12.6
OTC	34.30	5.30	Software Publishing Corp	8.25	0.13	1.5
OTC	17.25	5.63	Software Toolworks Inc	11.25	-0.63	-5.3
OTC	2.88	9.25	Spinnaker Software	2.28	0.22	10.6
OTC	13.75	6.75	State of the Art	7.38	-0.38	-4.8
NYS	33.63	32.63	Sterling Software Inc.	27.38	-1.30	-5.2
OTC	21.63	9.63	Struct. Dynamics Research	16.38	-3.13	-16.0
OTC	43.30	21.00	Sybase Inc. (H)	40.38	-1.38	-3.3
OTC	20.50	9.25	Symantec Corp.	36.00	-3.88	-10.5
OTC	25.30	30.00	System Software Assoc.	34.50	-0.75	4.9
OTC	8.50	2.75	Trinzic Corp.	5.88	0.50	9.3
OTC	26.50	33.30	ViewLogic Systems	19.75	-2.00	-9.2
OTC	22.00	5.50	Walker Interactive Systems	10.30	0.75	7.7
OTC	3.19	0.84	WordStar	3.25	0.13	11.1
Semiconductors						
NYS	32.88	15.88	Advanced Micro Devices	17.50	-1.13	-6.0
NYS	28.00	14.38	Analog Devices Inc.	22.13	-1.38	-5.9
OTC	38.63	14.25	Atmel Corp	30.00	2.75	10.1
OTC	6.88	2.75	Chips and Technologies	5.94	-0.31	-5.0
OTC	39.75	33.00	Cirrus Logic	35.88	-0.13	-0.3
NYS	16.75	8.83	Cypress Semiconductor Corp	12.13	-0.30	-4.0
NYS	19.00	31.75	Dallas Semiconductor	13.63	0.00	0.0
OTC	74.30	38.25	Intel Corp.	58.00	-5.25	-8.3
NYS	19.25	10.00	LSI Logic Corp.	33.75	-0.13	-0.9
OTC	26.75	12.25	Lattice Semiconductor	13.25	-1.00	-7.0
NYS	83.63	18.25	Micron Technology	47.63	-0.63	-1.3
NYS	507.30	48.75	Motorola Inc.	91.00	5.38	-5.6
NYS	21.75	10.13	National Semiconductor	14.75	-0.63	-4.1
OTC	14.50	6.30	Sierra Semiconductor	8.38	0.00	0.0
OTC	52.75	25.25	SynOpsys	46.30	0.38	0.8
NYS	84.25	45.13	Texas Instruments	60.38	-3.25	-5.1
OTC	18.88	6.30	VLSI Technology	10.75	0.38	3.6
OTC	14.38	4.88	Weitek	9.00	0.13	1.4
ASE	10.38	3.63	Western Digital Corp. (H)	9.50	0.38	3.8
OTC	54.30	23.75	Xilinx	42.75	9.25	12.4
OTC	40.75	39.00	Zilog Inc	27.50	-0.30	1.8
Peripherals and Subsystems						
OTC	24.75	10.30	American Power Conversion	19.25	0.25	1.3
OTC	23.00	15.30	BancTec Inc. (H)	22.50	-0.13	-0.6
OTC	37.00	3.50	Cambex Corp.	5.00	0.25	5.3
ASE	18.38	3.88	Cognitronics Corp	4.88	-0.25	-4.9
NYS	25.50	9.00	Conner Peripherals	13.13	-1.25	-8.7
OTC	38.30	37.50	Creative Technologies Inc.	26.00	-3.25	-4.6
OTC	30.75	6.30	Data Race Inc.	9.88	0.13	1.3
ASE	12.30	7.30	Dataram Corp.	9.38	-0.13	-1.3
NYS	39.00	9.75	EMC Corp	31.88	2.63	-7.6
OTC	30.30	5.25	Emulex Corp	6.38	0.33	2.6
OTC	20.00	14.00	Evans & Sutherland	30.25	0.75	4.3
OTC	18.75	7.50	Exabyte	17.75	0.33	0.2
OTC	34.00	19.34	Intelligent Info. Systems	24.88	-0.13	-0.5
OTC	8.25	2.30	Iomega Corp	3.25	0.00	0.0
OTC	12.30	8.75	IPL Systems Inc.	8.25	0.50	6.5
OTC	24.00	13.75	Komag Inc.	16.25	0.25	1.6
OTC	18.38	4.38	Maxtor Corp	6.00	-0.25	-4.0
OTC	9.88	5.75	Micropolis Corp.	7.25	-0.75	-9.4
NYS	317.00	97.25	3M Corp	108.13	-0.25	-0.2
OTC	8.00	4.00	Printronix Inc.	7.75	0.30	6.9
NYS	37.25	7.30	QMS Inc	9.35	-3.13	-10.8
OTC	37.00	9.38	Quantum Corp	13.25	-3.30	-10.2
OTC	9.13	3.15	Radius Inc. (H)	7.13	-3.88	-20.8
NYS	37.75	31.75	Recognition Equipment	15.00	-1.38	-8.4
OTC	12.75	3.63	Rexon Inc.	5.13	0.75	32.1
OTC	35.13	13.15	Seagate Technology	20.30	-3.63	-15.0
NYS	45.00	18.00	Storage Technology	30.75	-1.25	-3.9
NYS	27.88	18.50	Tektronix Inc.	21.75	-0.13	-0.6
NYS	89.50	69.88	Xerox Corp.	89.30	2.38	9.0
Services						
NYS	4.38	1.63	Allerion Inc.	3.63	-0.25	6.5
OTC	23.75	14.88	American Mgmt. Systems	18.63	-1.38	-6.9
NYS	4.63	2.38	Anacomp Inc.	4.00	0.25	6.7
OTC	25.84	35.00	Analysts Int'l	17.30	-0.88	-4.6
NYS	56.30	46.88	Auto Data Processing	55.38	0.25	0.5
NYS	19.88	13.00	Ceridian Corp.	18.88	0.63	3.6
NYS	21.00	13.13	Comdisco Inc.	19.38	-0.13	-0.6
OTC	13.38	6.00	Computer Horizons	12.13	0.00	0.0
NYS	100.25	20.00	Computer Sciences	97.75	0.25	0.3
NYS	9.00	6.00	Computer Task Group	7.13	0.25	3.6
NYS	37.00	19.00	CompUSA Inc	22.50	-4.30	-16.2
OTC	14.15	8.38	Control Data Systems Inc.	10.38	0.25	2.9
OTC	16.00	7.00	Corporate Software	14.88	0.00	0.0
OTC	31.25	6.63	Egghead Discount Software	9.25	0.25	2.8
NYS	35.88	26.00	General Motors E (EDS)	26.73	-1.63	-5.7
OTC	25.30	13.75	Inacom Corp.	17.30	0.30	2.9
OTC	27.63	10.88	Intelligent Electronics	24.73	-1.25	-4.8
OTC	17.00	9.63	Merisel	17.00	2.38	16.2
OTC	37.00	7.00	Microage Inc.	36.25	0.30	1.4
OTC	37.75	21.30	Paychex	33.25	0.30	1.5
NYS	87.25	23.63	Policy Management Sys.	25.88	2.88	32.5
NYS	43.75	24.13	Reynolds and Reynolds	63.75	-0.30	-1.1
OTC	25.75	13.38	SEI Corp. (H)	24.88	0.30	1.3
OTC	26.00	17.30	Shared Medical Systems	23.00	0.50	2.2
OTC	12.63	5.75	SHL Systemhouse	6.63	0.00	0.0
OTC	50.75	20.00	Software Spectrum Inc.	23.00	0.00	0.0
OTC	42.75	28.00	Sungard Data Systems	35.00	-0.13	-0.6

KEY: (H) = New annual high reached in period (L) = New annual low reached in period
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Second-class postage paid at Framingham, Mass., and additional mailing offices. Computerworld (ISSN 0010-4841) is published weekly, except 4 issues in August and a single combined issue for the last week in December and the first week in January by CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171. Copyright 1993 by CW Publishing/Inc. All rights reserved. Computerworld can be purchased on microfilm and microfiche through University Microfilms Inc., 300 N. Zeeb Road, Ann Arbor, Mich. 48106. Computerworld is indexed. Back issues, if available, may be purchased through the circulation department. Photocopy rights: permission to photocopy for internal or personal use is granted by CW Publishing/Inc. for libraries and other users registered with the Copyright Clearance Center (CCC), provided that the base fee of $3.00 per copy of the article, plus $.50 per page is paid directly to Copyright Clearance Center, 27 Congress Street, Salem, MA 01970. Reprints (minimum 500 copies) and permission to reprint may be purchased from Sharon Bryant, CW Publishing/Inc., 375 Cochituate Road, Box 9171, Framingham, Mass. 01701-9171. Requests for missing issues will be honored only if received within 60 days of issue date. Subscription rates: $4.00 a copy; U.S. — $48 a year; Canada — $110 a year; Central & So. America — $130 (surface), $250 (airmail) a year; Europe — $195 a year; all other countries — $295 a year. Four weeks notice is required for change of address. Allow six weeks for new subscription service to begin. Subscriptions call toll free (800) 669-1002. POSTMASTER: Send Form 3579 (Change of Address) to Computerworld, P.O. Box 2044, Marion, OH 43305.

Briefs

Earnings decline

Reeling from increased costs associated with recent acquisitions, Novell, Inc. last week reported fiscal fourth-quarter earnings of $68.9 million, off slightly from the $69.5 million profit posted in the same period last year. A $282 million third-quarter write-off for the Provo, Utah, firm's acquisition of Unix Systems Laboratories, Inc. caused a fiscal 1993 loss of $35.1 million. Excluding the write-off, Novell earned $282 million for the year, a 13% increase from last year. Fourth-quarter sales rose 19% to $309 million, boosting fiscal 1993 revenue to $1.12 billion, a 20% increase from last year.

Xerox restructures

Xerox Corp. plans to lay off roughly 10% of its 97,500-member work force next year as part of a renewed effort to increase productivity and lower operating costs. In addition, the Stamford, Conn., company plans to close and/or consolidate a number of facilities and streamline and simplify business processes. The company said it is still evaluating outsourcing some of its operations. Xerox plans to take a $700 million charge to cover restructuring costs.

SHORT TAKES Stratus Computer, Inc. in Marlboro, Mass., plans to acquire Isis Distributed Systems, Inc., a message-oriented middleware developer in Ithaca, N.Y., in a deal valued at $24 million.... Proteon, Inc. in Westboro, Mass., has named Bruce Bergman president and chief executive officer. He succeeds Elliot Honan, who remains vice president of finance. Bergman at one time ran Xylogics, Inc.... Iomega Corp. in Roy, Utah, has named Kim Edwards CEO. She succeeds Fred Wenninger, who resigned in October.... CS Acquisition Corp. has completed its cash tender offer to purchase all shares of Corporate Software, Inc. in Canton, Mass.

Microsoft brings it on home

Renews push in home finance and enters children's software market

By Thomas Hoffman

■ Just as Microsoft Corp.'s stellar growth in business software has started its descent to earth, the Redmond, Wash., juggernaut developer is setting its sights on a new course: the burgeoning home market.

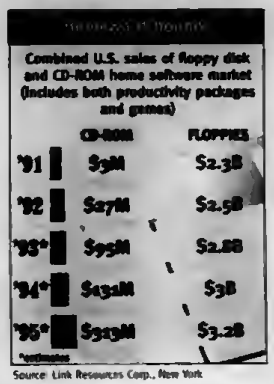
Last week, the world's largest independent software vendor laid out its plans to capture a sizable share of the fast-growing $2.8 billion home software market. Microsoft said it plans to quickly ramp up production of consumer software titles and will go on an all-out marketing blitz to gain mind-share.

Microsoft, which currently offers 35 entertainment and personal productivity packages — including Microsoft Works, Flight Simulator and Microsoft Money — is planning to boost the number of titles it sells to 100 by the end of next year, according to Microsoft chairman and chief executive officer Bill Gates.

In addition, the company plans to increase consumer awareness of its Microsoft Home product line by airing more than 600 cable television commercials on its offerings during the next two months, according to Patty Sonesifer, vice president of Microsoft's consumer division. Financial analysts put the 60-day advertising campaign at a cost of $1 million.

Last week, the company bolstered its presence in the children's educational market when it introduced Fine Artist and Creative Writer. Creative Writer, a word processing/publishing program targeted at and codeveloped by the 8- to 14-year-old crowd, is an imaginative interactive package designed to make essay writing and education fun, combining simulated animal sounds, graphics and pictures with myriad educational avenues to explore.

Neither Fine Artist nor Creative Writer are equipped with stodgy user manuals. Instead, users are guided through their educational odysseys with the help of McZee, a big-nosed, bespectacled geek who could easily pass as an unflattering caricature of Microsoft's prominent founder.



Source: Link Resources Corp., New York

Easy to use

Analysts said the products are considerably more imaginative and easier to use than existing products. "Creative Writer shows the real capabilities of how to use a computer's power in a very creative way," said Walter Miao, vice president of technology at Link Resources Corp., a New York market research firm.

Miao, who along with his 9-year-old daughter Erica have been testing the package for the past few months, said they are both smitten with the product. "She really uses it to stimulate some of her creative thought processes in writing an essay or a short story. And I'm so convinced about it that I told her teachers to check it out," Miao said.

That is high praise for Microsoft, which despite its domination in DOS and Windows packages for corporate users, has, to date, been an also-ran in the home software market compared with smaller but more established players such as educational developer Broderbund Software, Inc. and game giant Nintendo of America, Inc.

Although the company's $200 million in annual consumer software revenue comprises only 5% of its total sales, Gates said he believes the home software market is the hottest growth market in the PC industry and estimated that Microsoft's consumer revenue could reach $600 million by 1997. Gates and industry analysts said they believe the floppy disk home software market will give way to up-and-coming CD-ROM products by 1996.

Analysts were reluctant to call Gates' bluff on his home software revenue projections. "Six hundred million dollars is a drop in the bucket for a $4 billion company like Microsoft," said Timothy R. McCollum, a financial analyst at Dean Witter Reynolds in New York. "They certainly have the marketing clout to succeed in this arena," added Terence Quinn, managing director at Furman-Selz, Inc. in New York.

Still, Microsoft has its work cut out for it in the personal finance market. Last week, the company introduced an upgraded Microsoft Money 3.0, which will include features such as electronic billing payments for users through an on-line connection established with National Payment Clearinghouse when the product begins shipping in February.

Losing out

But analysts said Microsoft has been one-upped by personal finance rival and market leader Intuit, Inc., which last week stole Microsoft's thunder by announcing its mid-1994 plans to introduce a more complete suite of electronic services for its 5 million Quicken software customers through Visa international and its 18,000 member banks (see story below).

"The Microsoft Money team is doing a good job, but they keep getting their lunch stolen from them by [Intuit President] Scott Cook. He's keeping one step ahead of them," noted Jesse Berst, editor and publisher of "Windows Watcher," a newsletter in Redmond, Wash.

Analysts said Microsoft will have a difficult time trying to wrest customers away from Intuit, since personal finance software users are reluctant to jump from one product to another, given the bothersome chore of having to migrate data and files from one package to another. "Unless there's a real whiz-bang product out there, personal finance users are apt to stay with their existing system," said Abhijeet Rane, a research analyst at Link Resources.

Binary banking

Visa and Intuit are developing an interactive electronic banking service for Visa's member banks and 100 million U.S. cardholders. Services to be offered include electronic billing payments, automated account reconciliation and intrabank funds transfer.

Intuit, a Menlo Park, Calif., developer of Quicken, a market-leading personal finance package for home PC users, will develop the front-end software for Intelibanking customers with modem-ready PCs and personal digital assistants. Visa will connect its member institutions through its VisaNet network, allowing members to then customize the services for their customers, according to Scott Loftesness, group vice president at the San Mateo, Calif.-based consumer payment service.

Loftesness said the firm will begin piloting the system in the first half of next year and roll out production-ready applications to member banks in the second half of the year. Loftesness declined to provide estimated revenue for the service.

Visa member banks that have already committed to the program include Wells Fargo Bank, Banc One Corp. and Meridian Bank. — *Thomas Hoffman*

Wysiwyg

What would YOU want to be arrested for?

"I would want to release all the dogs from all the pounds all over the world!

I love dogs and hate the idea of them being caged up. I would want to be known as the man who liberated the dogs."

—Richard Rabins, Co-chairman, Alpha Software Corp.

"Hacking into the CIA's JFK files."

—Ron Zambonini, President and COO, Cognos Corp.

"Evading the new Clinton tax plan."

—George Klaus, President and CEO, Frame Technology Corp.

Illustrations by Michael Moran

The 5th Wave *by* Rich Tennant

Inside Lines

Here we go again

Microsoft is telling developers it may position Chicago as both a desktop and server product. Given its 32-bit, multitasking capabilities, there is no reason why the product can't function as a server. This contradicts the message Microsoft has been spouting for the past year that Chicago would be a client to Windows NT and Cairo's server.

Nontoxic bug spray

IBM quietly slipped into limited beta testing last week a fix for OS/2 2.1 that, according to one tester, takes care of "lots and lots and lots of minor little bugs." One bug the fix eliminates causes conflicting messages to appear on screen during system shutdown. The messages do not make it clear whether the system has shut down so users can safely turn their machines off. The Service Pak is expected to be available sometime in the first quarter of next year.

Too hot to handle (for now)

Intel has a small problem with its top-of-the-line 66-MHz Pentium chip: It doesn't [illegible] 66 MHz. In this month Intel will announce a higher-voltage (hence, faster) version of the chip, according to sources at hardware makers. The current chip runs (slowly) at 5V, but the new chip, initially specified at 5.6V, will run at 5.4V, the sources said. This will delay 66-MHz Pentium systems from many vendors for at least two months, as they have to redesign processor boards to include a new voltage regulation circuit.

Can we help?

Novell's schedule for shipping Processor Independent NetWare has slipped from the first half of next year to the second half, with target dates of September or October now being mentioned, according to executives at Digital, which plans to support the software on its Alpha AXP systems. William Demmer, vice president at Digital's Computer Systems Group, said Digital is "trying to work with Novell to see if we can bring that back in a little bit."

Relief at last

The biggest plus of Microsoft's beta version of the NT NetWare redirector, according to the scuttlebutt on CompuServe, is that it lets one NT Advanced Server act as a NetWare gateway for its clients. Windows desktops thus get access to NetWare and NT services via one redirector — NT's — instead of needing two. Novell's beta version of the NT NetWare redirector lacks the gateway function, which Novell feels limits performance.

Tempest in a teapot

A minor brouhaha erupted in the financial community last week over an analyst report that predicted Lotus would garner another $60 million in revenue for the next quarter as a result of restructuring a revenue-sharing program with IBM for OS/2 products. Lotus executives last week confirmed that there is a revenue sharing program with IBM and that it was recently restructured. However, the restructuring will not lead to any substantial additional revenue for Lotus, and the company is not alerting analysts to raise their quarterly estimates.

Microsoft found itself in the slightly embarrassing position of having to technically "underwrite" 15 to 20 technical types from IBM, Apple, Taligent and Sun to this week's Professional Developers Conference in Anaheim, Calif. It seems that a couple dozen operating systems programmers from those companies — at least one of whom claimed to sign a nondisclosure agreement — were hoping to get a 12- to 18-month head start on Microsoft's plans for Windows NT, Chicago and Cairo. Microsoft sat down with officials from each company and decided one by one who was appropriate and who wasn't, allowing those who were working on complementary technologies to attend. Phone, fax or CompuServe news editor Alan Alper with news tips at (800) 343-6474, (508) 875-8931 or 75537,2413, respectively. Or try Computerworld's 24-hour voice-mail tip line at (508) 820-8555.

Software Digest

RATINGS REPORT®

The Independent Comparative Ratings Report for Selecting IBM PC Business Software

Vol.10, #11, November 1993

WINDOWS DATABASES FOR END USERS		
	Software Digest Rating	Overall Evaluation (out of 10 pts.)
Lotus Approach™ 2.1	★★★★	**8.0**
Filemaker® Pro	★★★	7.7
Microsoft® Access™	★★★	7.4
Q&A® for Windows	★	5.8

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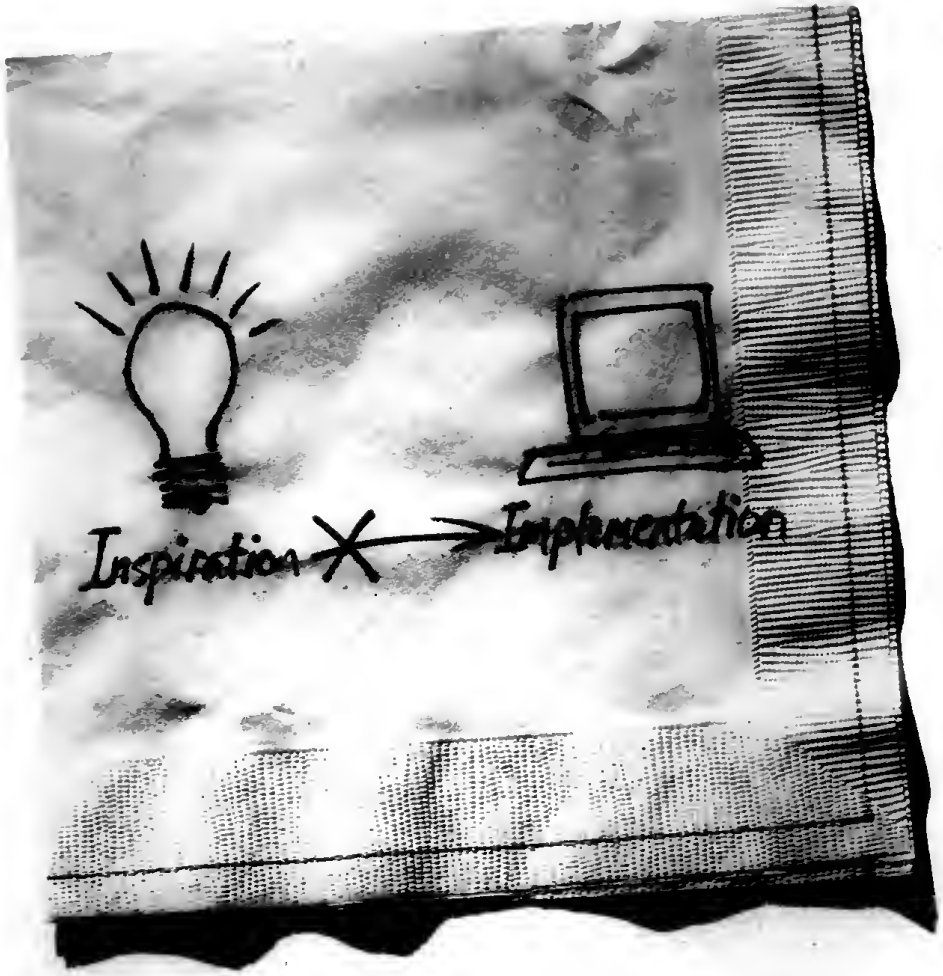

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